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THESIS

**FACTORS THAT IMPACT A VIRTUAL
COMMANDER IN A CONCURRENT COMMAND
STRUCTURE**

by

Alexander J. Waugh
March 1997

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**FACTORS THAT IMPACT A VIRTUAL COMMANDER
IN A CONCURRENT COMMAND STRUCTURE**

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Captain, U.S. Marine Corps
B.S., United States Naval Academy, 1991

Submitted in partial fulfillment
of the requirements for the degree of

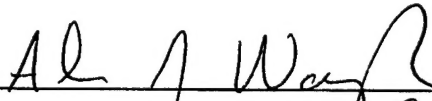
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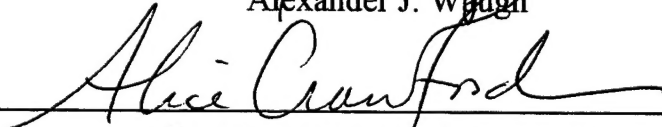
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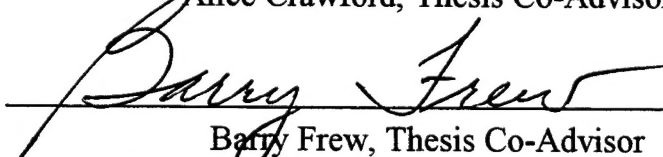


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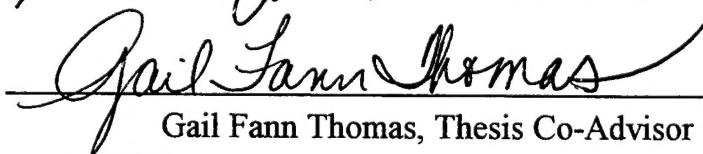
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ABSTRACT

This thesis analyzes factors that impact a Virtual Commander. In-depth interviews with personnel at the Naval Postgraduate School and the George C. Marshall Center for European Studies informed the development of a case study documenting the implementation and maintenance of a virtual command structure. Qualitative and archival data are analyzed to inform the professional officer corps about factors that impact a virtual command structure. Based in a systems approach, seven factors frame the research: executive leadership style, skills, virtual command structure, strategic implementation factors, staff employment, advanced information technology systems, and organizational culture. Strengths, weaknesses, opportunities, and threats are discussed for implementing and maintaining a virtual command presence. Propositions are provided for future analysis.

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I. INTRODUCTION

In October 1996, a flag officer was offered command of an organization because of a unique capacity in international relations, academic background, and experience in civilian/military affairs. This officer was already a Commanding Officer at a major command and did not want to relinquish the position. The new command is located in a different country and separated by nine time zones from the existing command. Historically, it would have been impossible for a flag officer to command both organizations at the same time because of the military leadership paradigm that requires a Commander's physical presence. This paradigm may soon change. Advanced information technologies now offer military leaders decision making tools that create a virtual command presence allowing an officer to fill two billets at the same time. In fact, this presence in some ways will allow the officer to be in two places at the same time. Very little systematic research has been conducted on the military application of virtual command presence. This thesis addresses virtual command structure and its impact on military organizational behavior.

A. OBJECTIVE

The objective of this thesis is to analyze the impact, influence, and technological aspects affecting two organizations commanded by one officer. The study of these effects on what may be called a "Virtual Commander" on two organizations has value for the fields of organizational behavior, leadership, and military sociology. It also provides implications for future military leadership characteristics and organizational configurations.

B. RESEARCH QUESTIONS

The following research questions are addressed in this thesis:

What are the opportunities and challenges of establishing a virtual command presence while maintaining a concurrent command structure?

What are the specific opportunities and challenges for each organization?

What are the specific opportunities and challenges for subordinate personnel?

What are the specific opportunities and challenges for the Virtual Commander?

What are the characteristics of information transfer changes that must be made to make a Virtual Command Structure?

C. SCOPE AND LIMITATIONS

The scope of this thesis is to identify factors that impact a concurrent command structure requiring a virtual command presence. A case study is used to describe two organizations commanded simultaneously by the same officer. Qualitative, rather than quantitative methods are appropriate for this project to develop a theoretical model that best lays the framework for the system in this case study. Little literature exists on the topics of implementing and maintaining a virtual command presence in a military environment. Therefore, to identify factors that affect organizational behavior, comprehensive interviews were conducted with personnel at both organizations.

This study is limited because of the lack of previous data collection in this field. Data collection was limited to these two commands, therefore there may be bias by the interview participants in order to compliment the Commander. The interviewers attempted to reduce the bias by asking open-ended, neutral questions. Both interviewers agreed that the interview participants were forthright and the responses range from negative to positive in all the questions.

D. METHODOLOGY

Interviews are one method to track the dynamics of change in organizations. Various clinical research methods considered to gather data include: archival analysis, interview, historical analysis, direct observation, participant observation, and biographical research. Personal interview and direct observation were the primary methods used for this research. Archival analysis is also conducted to show basic trends of information flow

with the Concurrent Commander and the change in personal interaction as result of the assumption of a second command. In addition, to establish reference data for future research, a pilot survey was administered to key personnel at the Naval Postgraduate School. Data from the survey was not used in this report due to the time constraints for concluding this exploratory analysis. From the interviews, multiple qualitative data points were derived. Subsequently, an organizational model was developed that incorporates multiple variables and determines the impact that this organizational change has on other factors.

1. The Model

The model used for this thesis is an adaptation of McKinsey & Company's Seven-S Model for organizational effectiveness. This model is an instrument for measuring the impact of organizational change and relating that change to an entire system. Waterman, Peters and Phillips assert that "productive organization change is not simply a matter of structure...effective organizational change is really the relationship between structure, strategy, systems, style, skills, staff and superordinate goals."¹ Superordinate goals are defined as an organizational culture, a set of values and principles that guide organizational behavior. All seven factors are interconnected, therefore the neglect of any one of these factors may have adverse effects on an organization.

The design used for this analysis is similar to the McKinsey model. The factors analyzed are the virtual command structure, staff, systems of information flow, culture, personnel, and command leadership style. These variables are interconnected in this scenario. The variables are equally important in determining the impact of organizational change on the implementation and maintenance of a virtual command presence in a concurrent command structure.

¹David Kolb, Irwin Ruben, and Joyce Osland. The Organizational Behavior Reader, (Englewood Cliffs, New Jersey: Prentice Hall), 565.

2. Interviews

All interviews were conducted by Captain Alex J. Waugh, USMC and Lieutenant J. Randal Wimmer, USN, students at the Naval Postgraduate School. Captain Waugh and Lieutenant Wimmer worked together as a team gathering and analyzing the data. A team approach to the interview creates a more fluid process of questioning, probing, note taking and listening. Analysis is improved through a process of questioning, debate, and validating each other's assumptions and conclusions. Individual interviews were conducted with 39 senior civilian executive managers and military personnel at the two organizations investigated in this case study. The first set of interviews was conducted from 10 December 1996 to 17 December 1996 at the George C. Marshall European Center for Security Studies. Sixteen of the 23 people interviewed were military personnel. These 16 participants included nine officers above O-5, five between O-3 and O-5, and two enlisted E-7s. The six civilian personnel had extensive backgrounds with military organizations and the functioning of military leadership.

The second set of interviews occurred at the Naval Postgraduate School from 15 January 1997 to 29 January 1997. Nine of the 16 people interviewed were military personnel. These nine included five officers above O-5 and four between O-3 and O-5. The remaining seven civilian personnel had extensive background in external military organizations and had considerable experience at the primary command.

Interviews ranged from 30 minutes to 2 hours in length. The objectives for the interviews were to evaluate relevant issues and changes required by establishing a virtual command structure, to assess the role of information technology, and to identify human factors issues and the potential impact on military leadership. All the interviewees were aware of the scope of the project and supported the research to the greatest extent possible.

Interviews opened with the interviewer reading a statement about the objective of the interview, defining the areas of discussion, and expressing a desire to record the interview for the purpose of transcription. Two objections were raised about recording the interviews. In these situations, the interviewers took copious notes. Tape recording

did not seem to detract or inhibit the openness of the discussion. Open-ended, semi-structured questions were intentionally designed to permit exploration of topics that emerged during the interviews.

To facilitate candid discussion, interview participants were informed of the intention to keep their personal identities confidential. To fulfill the promise of anonymity, quotations from the subjects will be attributed categorically, rather than specifically by name. Subjects were also informed that transcripts and audio tapes would only be used for data collection and analysis.

Analysis of the interviews incorporated using a matrix format with specific topic areas on one axis and interviewees on the second. When the interview participant commented a specific way on a subject, the statement was recorded as positive, neutral or negative. Groupings of data points were separated by command and status of personnel. Interviews also contributed significantly to framing the model used in this thesis. Trends expressed during the interviews were diagrammed facilitating the adaptation of the McKinsey 7S model.

3. Archival Data

Quantitative data was collected for analysis of changes of information transfer to and from the Superintendent of the Naval Postgraduate School. Personal schedules were obtained from April 1996 until March 1997 detailing specific interaction with the flag officer. The period between November 1996 and March 1997, schedules were obtained from both the Marshall Center and the Naval Postgraduate School. Interaction is separated into distinct categories for analysis of changes that occur with the physical separation of the Commander. The number of electronic mail messages with the Superintendent, Federal Express and Postal Service expenditures are also analyzed to distinguish trends of information transfer during and prior to the assumption of the second command.

E. ORGANIZATION OF THESIS

This thesis is comprised of eight chapters. Chapter II supplies background information for the case study analyzed in this thesis. The background information includes general information on the Naval Postgraduate School and the George C. Marshall Center for European Studies, delineates respective chains of command, and provides a brief description of the Commanding Officer of both organizations. Chapter III discusses executive management roles, displays scheduled personal interaction of the flag officer, stipulates definitions that are pertinent to the study, and outlines the decision making role of the Virtual Commander. Chapter IV addresses the responsibilities of staff personnel of a Virtual Commander.

Chapter V details the impact of advanced information technology on the implementation and maintenance of a virtual command structure. This chapter provides a literature review on relevant information technology management issues as well as specific archival data analysis. Chapter VI explains the cultural impact on having a Virtual Commander within macro- and micro-organizational contexts. Chapter VII is a strengths, weaknesses, opportunities and threats analysis for this case study and future implementation of a Virtual Commander. Chapter VIII is the conclusion and recommends specific areas of research for future study of implementing and maintaining a Virtual Command structure.

II. BACKGROUND

This thesis is a case study of two organizations commanded by the same Flag Officer. The Officer became the Superintendent of the Naval Postgraduate School on 8 September 1995 and assumed the role of Interim Director at the Marshall Center on 11 November 1996. This chapter provides a background of both military academic institutions, delineates respective chains of command, and provides a general personal background on the Concurrent Commander of the two organizations in this case study.

Both academic and military communities are undergoing rapid and distinct changes. The Naval Postgraduate School Strategic Plan states that "the academic world is grappling with...the even larger issue of exploiting the promises of high technology, particularly information and communications technologies. The military world is facing fundamental changes in the processes of warfare resulting from advances in several technologies, including information and communications technologies." This thesis is a study of the factors that are associated with implementing new technology for command and control of two military academic institutions.

The Concurrent Commander in this case study is a U.S. military flag officer with an extensive academic, administrative, and political relations background. Upon assuming the role of Interim Director at the Marshall Center, a higher Department of Defense authority directed the Flag Officer to spend three weeks during each month in Garmisch, Germany. The fourth week is spent at the Naval Postgraduate School. However, both positions require the Commander to travel extensively. It is the premise of this thesis that the Concurrent Commander maintains a virtual command presence at the Naval Postgraduate School while not physically in Monterey during the period of observation for this study. It is not observed if the Commander maintains a virtual command presence at the Marshall Center while located in Monterey.

A. THE NAVAL POSTGRADUATE SCHOOL

The Naval Postgraduate School is located in Monterey, California approximately 120 miles south of San Francisco. The campus, which has been located at the current site since 1947, has 627 acres of land and is near downtown Monterey. The school houses state-of-the-art laboratories, numerous academic buildings, a library, government housing, and recreational facilities. The school is administered as an activity of the Department of the Navy.

The mission of the Naval Postgraduate School, as posted in the organization's 1997 Strategic Plan, is to "increase the combat effectiveness of U.S. and Allied armed forces and enhance the security of the USA through advanced education and research programs focused on the technical, analytical, and managerial tools needed to confront defense-related challenges." The Naval Postgraduate School offers 22 Master of Science and 1 Master of Art degrees in addition to 3 Engineer's Degrees and 11 Doctor of Philosophy degrees.

The current population of the student body is approximately 1,366 including International students from 37 countries. The service percentages of the student body are: Navy 64 percent, Marines 10 percent, Army 8 percent, Air Force 2 percent, and International students 14 percent. There are approximately 350 permanent and temporary civilian faculty, 101 officers on staff or faculty, 83 enlisted on staff, and 970 civilian employees at the Naval Postgraduate School. The school is accredited by the Western Association of Schools and Colleges. The hierarchical chain of command is displayed the Figure 1.

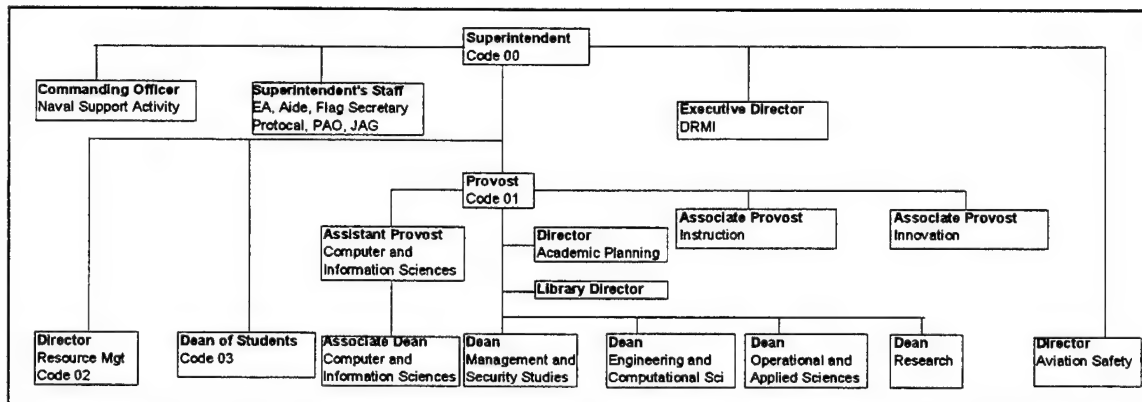


Figure 1. Naval Postgraduate School Organizational Chart

The Naval Postgraduate School is a mature organization, with experienced personnel filling essential strategic billets. The command is a stable environment from which the organization is maintaining a positive path towards the future. The Superintendent provides strategic direction along that path. From September 1995 until November 1996, the Superintendent conducted weekly four-hour meetings with senior civilian and military subordinates. The Naval Postgraduate School Executive Board (NEB) conducted an evaluation of the internal and external environments and has revised an outdated strategic plan and established guiding principles for the Naval Postgraduate School for the near future. The plan is a collaborative effort of the Superintendent, staff, and faculty. Interview data support the emphasis that this board has placed on teamwork and building an efficient decision making structure. After assuming the second command, NEB meetings are still continued, using video tele-conferencing when the Commander is in Germany. The Superintendent uses video tele-conferencing meetings as both a decision making instrument and as an information/debriefing tool.

During the month of December, the Naval Postgraduate School senior personnel prepared and conducted a vital presentation to be delivered to the Graduate Education Review Board (GERB) in Washington DC. The GERB, which is chaired by the Chief of Naval Operations, provides policy guidance and direction for the Navy's graduate education program. The board also reviews the adequacy and stability of resources and student input. The Superintendent maintained constant lines of communication during the GERB work up, providing input and key decisions throughout the process.

B. THE GEORGE C. MARSHALL EUROPEAN CENTER FOR SECURITY STUDIES

The George C. Marshall European Center for Security Studies is located in Garmisch, Germany approximately 70 miles south of Munich. The Center was founded on 5 June 1993 and is dedicated to stabilizing, thereby strengthening, post Cold-War Europe. The Marshall Center provides instruction in national security affairs to Europe's senior defense officials, conducts research on European security issues, holds conferences on those issues, and conducts specialized regional studies and language training courses.

The Marshall Center is a subordinate unit of the United States European Command (USEUCOM). The Center has three academic divisions: the College of Strategic Studies and Defense Economics, the Research and Conference Center, and the Institute for Eurasian Studies. The Director of Plans and Policy and the Director of Support provide the foundation necessary for daily operations of the academic divisions.

The College of Strategic Studies and Defense Economics has both U.S. and International faculty that instruct approximately 80 students from Central and Eastern Europe and the former Soviet Union for 5-month classes that occur twice per year. Students are mostly military personnel above the rank of Lieutenant Colonel.

The Institute for Eurasian Studies consists of three academic programs: the Foreign Area Officer (FAO) program, the Foreign Language Training Center-Europe, and the English Language program, which supports the College of Strategic Studies and Defense Economics students. Programs vary in length from 18 months (FAO) to short-course language training. Approximately 500 military personnel from around the world are trained in the Foreign Language Training Center.

The Research and Conference Center presents conferences, seminars and workshops to more senior officers who cannot attend the College of Strategic Studies and Defense Economics 5-month course. The Research and Conference Center concentrates on European security issues, civilian oversight of defense programs, civil-military relations, law of war and humanitarian law, combined peacekeeping training and exercises, and industrial security.

There are 33 military personnel in directorial, support, staff or faculty positions. Approximately 108 civilian personnel from the United States, Eastern and Western Europe are employed as professors, instructors, researchers, support, and staff personnel. The hierarchical chain of command is provided in Figure 2.

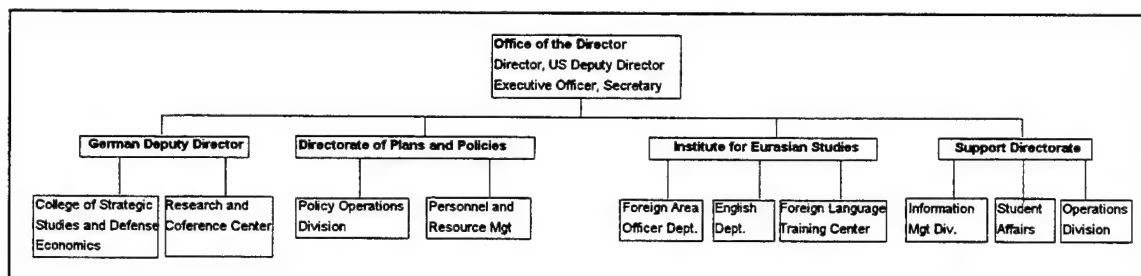


Figure 2. George C. Marshall Center Organizational Chart

The Marshall Center is a young organization that has struggled during its first few years of existence. Issues related to finances, language barriers, and general management have been cited as reasons for bringing in a new Director. To counter these problems, new personnel were hired and reported to the command to fill key positions at the Center during the last months of 1996. This also allowed senior military personnel already present to fill the positions that they were originally assigned. Currently, the military personnel at the Marshall Center are exceptionally qualified and represent the best that each service has to offer.

The Deputy Director of the Marshall Center is a retired Army General who reported to the command one week before the Superintendent assumed the role of Director. The Directorate heads consist of 1 German Air Force, 1 US Air Force, and 2 US Army Colonels. The current organization personnel are committed to rectifying policies and procedures that may have undermined achievement of the Center's mission.

III. VIRTUAL COMMAND STRUCTURE

A. INTRODUCTION

To maintain command presence when not physically at an organization, a system must be established to support a Commander. This structure includes the Commander, immediate staff, technological assistance, and subordinate personnel. This chapter defines the role of a public sector executive level manager, examines the role of various commanders and types of command involved in this case study, and introduces the tools available for the use by a Virtual Commander. Archival analysis is presented documenting the personal schedules of this case study's Concurrent Commander. Analysis of interaction with personnel at the initial command, the Naval Postgraduate School, is provided to describe the impact on traditional executive managerial roles of implementing a virtual command structure. The Chapter concludes with definitions of relevant terms in a virtual command scenario.

In 1916, the French industrialist Henri Fayol defined managerial duties as planning, organizing, coordinating, and controlling activities.² Mintzberg added to the definition of managerial responsibilities by establishing three roles, or organized sets of behaviors identified with a position. Mintzberg's three roles are interpersonal, informational, and decisional.³

Interpersonal roles include figurehead status, leadership and guidance needs, and a liaison role of a manager that makes contact outside the vertical chain of command. Included in informational roles are the necessity for a manager to be a monitor, a disseminator, and a spokesperson. A manager must be a monitor to develop and maintain personal contacts, a disseminator to pass information to subordinates that would otherwise not have access to it, and a spokesperson to send information to people outside the unit.

²Henry Mintzberg, "The Manager's Job: Folklore and Fact" in The Organizational Behavior Reader (Englewood Cliffs, New Jersey: Prentice Hall, 1991), 50

³Ibid., 57.

In a decisional role a manager improves the unit and adapts to outside change, handles disturbances where the manager involuntarily responds to pressures, acts as the resource allocator, and serves as a negotiator for the organization.

Managerial responsibilities in the public sector differ from those of the private sector. Roberts annotates "general managers in the public sector face two basic challenges leading their public bureaus. They are expected to strive for both organizational efficiency and organizational effectiveness."⁴ However, efficiency and effectiveness in organizations are often contradictory because of political, technical, social and economic factors.

Managerial activities vary according to the hierarchical level of the employee. Mejia, McCann, and Page found that top managers perform more "long-range planning, monitoring performance indicators, coordinating, and consulting. Lower-level managers, by contrast, rate very high on supervising, because their responsibility is to accomplish tasks through rank-and-file employees. Middle managers are rated about in the middle for all activities."⁵ This is consistent for responsibilities of officers. Junior officers interact more with junior enlisted personnel and think tactically while senior officers conduct operational and strategic planning.

Senior officers are not subject to clear-cut job descriptions, they receive mandates within certain boundaries they must act. The military executive is accountable for command strategic vision and also the integration and coordination of functions and operations. During the current era of downsizing and budget constraints, political representation has become a major obligation. Manpower and fiscal battles may provide the impetus for more senior military leaders to be in the Washington Metropolitan area to compete for scarce assets. Personal leadership style also dictates the approach an executive-level officer may take to command a major organization and employ subordinate staff responsibilities. Each individual officer has his or her own leadership style

⁴Nancy Roberts, Notes on four Approaches to General Management, Naval Postgraduate School Strategic Management Course Material, 1.

⁵Richard Daft and Richard Steers, Organizations: A Micro/Macro Approach (HarperCollins Publishers, 1986), 17.

determining how that person performs his or her duties. Some flag officers decentralize authority to subordinate commanders, others micro-manage. More centralized commands result in more time spent in management functions, particularly decision making.

B. PERSONAL INTERACTION OF THE SUPERINTENDENT

Analysis of the impact of personal interaction with subordinates of the Superintendent of the Naval Postgraduate School prior to the assumption of the second command provides baseline information for determining how information technology tools may fill the absence of physical contact. The Superintendent's schedules are published daily for the organization. These schedules were evaluated for specific personal interaction of the Flag Officer described in this case study and do not reflect time used conducting daily administrative functions. Scheduled interaction prior to the assumption of the Marshall Center is compared to interaction after.

The first approach used to evaluate personal interaction is similar to Mintzberg's roles described earlier in this chapter. However, because the content of discussion was not available for analysis, it was impossible to determine exactly what role that the Superintendent was filling. Fortunately, the schedules do reference the specific person or group the Flag Officer is involved in the interaction. Therefore, to evaluate the effect of personal impact, the schedules were evaluated by who the Flag Officer was interacting with instead of the role taken during the interaction.

Events on the daily schedules are sorted according to the following criteria: meetings, office calls with Naval Postgraduate School personnel, office calls with personnel external to the Naval Postgraduate School command, public events within the Naval Postgraduate School, interaction outside the boundaries of the Naval Postgraduate School with community personnel and interaction outside the boundaries of the Naval Postgraduate with mission-related personnel. Scheduled meetings consist of group interaction among personnel assigned to the Naval Postgraduate School. Specific examples of this type of interaction are staff meetings, the Superintendent's Operating Council, and Naval Postgraduate School Executive Board meetings.

Office calls are categorized according to who is scheduled for an appointment with the Flag Officer. Personnel assigned to the Naval Postgraduate School are assigned to the internal Naval Postgraduate School section, all others default to the external category. Events for the internal classification generally consist of counseling sessions, evaluations, personal meetings, punishment administration and personal award ceremonies. External Naval Postgraduate School office calls consist of visits by ranking civilian and military members that improve mission awareness of the institution.

The public events category refer to formal and informal observation of the Superintendent during scheduled events. These events have the highest probability for subordinates at all levels to have contact with the Flag Officer. Specific functions in this area include events for which the Flag Officer delivers opening and closing remarks, such as the Superintendent's Guest Lecture series and other symposiums, physical fitness training, and public awards ceremonies.

The final two categories capture the time spent outside the physical boundaries of the Naval Postgraduate School. The first area is community interaction, which documents the time the flag officer spends delivering speeches to local organizations and representing the school at community activities. Outside interaction that is specifically mission related is documented in the final category. Events that are represented in this category focus on non-local personnel that interact with the Superintendent outside the physical boundaries of the Naval Postgraduate School. The primary example for this category is time spent with distinguished visitors reinforcing command awareness and political representation.

1. Naval Postgraduate School Interaction

Fifty daily schedules between 15 February and 25 October, 1996 are evaluated for personal interaction. Schedules are limited to workdays and physical location of the Superintendent. Only the time physically present at the Naval Postgraduate School is analyzed. The events are analyzed by the average number of hours per day that the Superintendent interacts with associated personnel. The results of personal interaction are depicted in Table 1.

Meetings (hrs/day)	O/c Internal NPS	O/c External NPS	Public Events	Outside Community	Outside Mission
2.21	1.40	1.41	1.76	.69	.47

Table 1. Scheduled Interaction with the Superintendent of the Naval Postgraduate School prior to the Assumption of the Second Command.

The averaged scheduled interaction for the Superintendent accounted for a total of 8.015 hours per day. The schedules reflect that the majority of the Superintendent's time prior to the assumption of the second command was spent in meetings. Meetings are continued during the Superintendent's time in Garmisch, however the second most time-consuming function of the Flag Officer is public events with subordinate personnel, which can not be continued while not physically present. Figure 3 displays the percentages of scheduled interactions that are associated with the six categories per day.

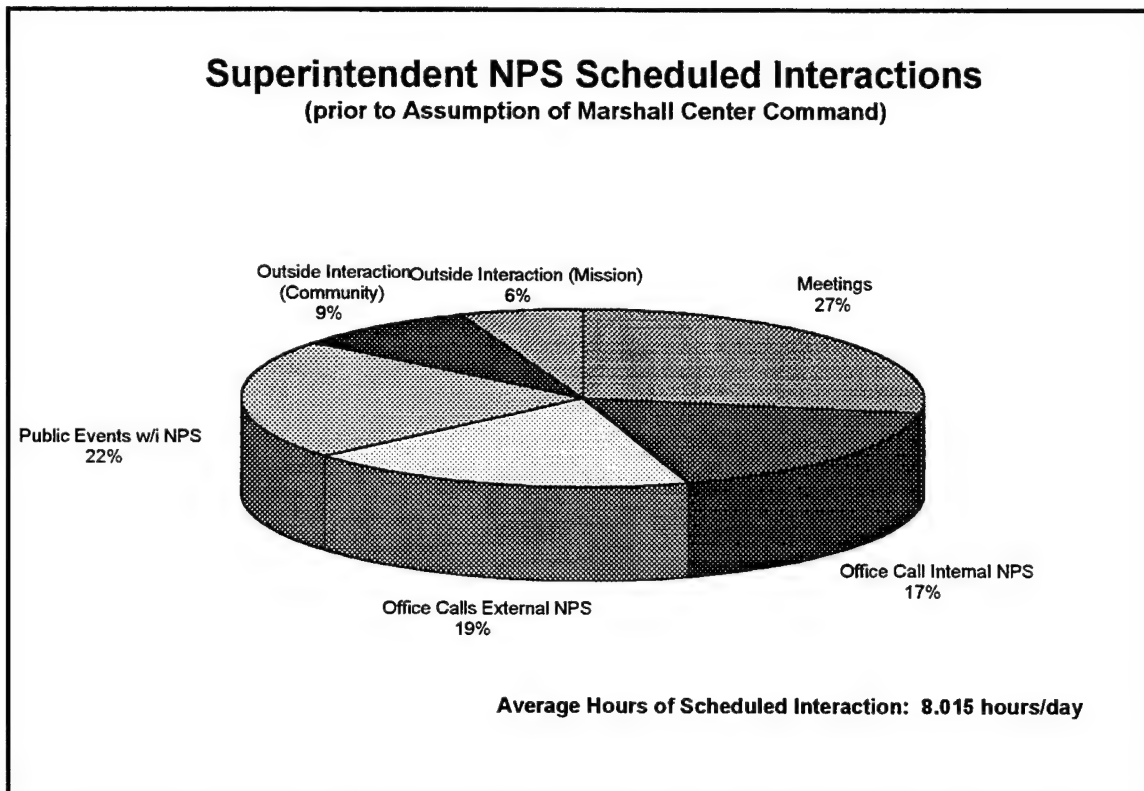


Figure 3. Percent of Scheduled Interactions of the Superintendent Prior to the Assumption of the Marshall Center Command.

Office calls total 36 percent of the Superintendent's scheduled interaction with personnel. This type of contact can be continued using telephone and video teleconferencing when the Superintendent is in Germany, however there is a loss of social cues that will be discussed in Chapter V. This analysis does not account for informal "hallway" interaction or administrative functions, consequently it is very likely the Superintendent has more interaction with subordinates than displayed in these data results.

2. Marshall Center Interaction

The Superintendent's schedules prior to assuming the second command reflect how the specific Commanding Officer in this case study interacts with others. Data analysis of the period after 10 November 1996 is compounded by complications. The specific Concurrent Commander's Marshall Center schedule reflects a time block for Naval Postgraduate School business, only video teleconferencing and other meetings reflect on this schedule. This period is from 1600 European time and after. The Naval Postgraduate School schedule for this time period reflects the agenda of the Acting Superintendent, not the actual Commander. Therefore, specific Naval Postgraduate School personnel/Superintendent interaction can not be quantified.

To compensate for the absence of comparable data, questionnaires were distributed to personal staff, executive board members, and interview data was used to document the Superintendent's time spent working on Naval Postgraduate School issues. Three types of interaction are analyzed with this method. The types are group meetings and communication with Naval Postgraduate School personnel. Although not indicated in Table 2, it is apparent that the Superintendent interacts with personnel not assigned to the Naval Postgraduate School concerning Naval Postgraduate School issues. Moreover, from interview data, interaction with visiting senior Department of Defense personnel, included discussion related to both the Marshall Center and the Naval Postgraduate School. Consequently, there are no means to adequately measure external interaction concerning Naval Postgraduate School issues.

Table 2 illustrates that the Superintendent averages approximately one-hour of meeting interaction and almost one-half an hour of direct personal interaction every single day. These results show a significant decrease in personal interaction with personnel from Naval Postgraduate School as would be hypothesized with the assumption of the second command. Implicit in this table is the assumption that it is not feasible for the Superintendent to perform any external community interaction or public events within the Naval Postgraduate School.

Meetings (hrs/day)	Internal NPS	External NPS	Public Events	Outside Community	Outside Mission
1.13	.58	Unknown	0	0	0

Table 2. Approximate Naval Postgraduate School Interaction of the Superintendent after while at the Marshall Center

There is significant decrease in the personal interaction of the Superintendent concerning the Naval Postgraduate School while at the Marshall Center. This change is illustrated in Table 3.

Meetings (hrs/day)	O/c Internal NPS	O/c External NPS	Public Events	Outside Community	Outside Mission
-1.08	-.82	Unknown	-1.76	-.69	-.47

Table 3. Change in Naval Postgraduate School Interaction of the Superintendent

A summation of the decrease in interaction suggests that the Superintendent spends up to five hours less per day personally interacting with personnel concerning Naval Postgraduate School issues while at the Marshall Center. However, these areas only document personal interaction and do not reflect other modes of communication, such as electronic mail, facsimile, and Federal Express. The use of these modes of communication increase when the Superintendent is at the Marshall Center. These results will be discussed in greater detail in Chapter V.

C. DEFINITIONS

1. Concurrent Commander

Working definitions of a Concurrent Commander, a concurrent command structure, a Displaced Commander, a Virtual Commander, a virtual command structure and an Absent Commanding Officer are derived from the research conducted for this case study. A Concurrent Commander is an officer that has officially assumed command of two or more organizations disassociated in regard to their respective subordinate chains of command. The Concurrent Commander may have a support team in order to more efficiently and effectively carry out assigned duties. This support team, along with a Commanding Officer, forms a concurrent command structure.

This case study analyzes a concurrent command structure. The structure consists of a Flag Officer, an Aide, and an enlisted administrative assistant. The support team is responsible for maintaining liaison with both organizations at all times and to ensure continuous information flow to and from the Flag Officer.

When establishing a concurrent command structure, the most pressing issue to determine is which physical command presence the commander will maintain. The commander may lead one organization by traditional methods, meaning the Commander is present at organizational headquarters for the vast majority of time. However, executive military commanders are often away from their headquarters fulfilling their figurehead, political representation, and liaison roles. Each particular Commanding Officer defines this role personally because they have their own leadership style and know the time required to physically be present at the command. However, it is impossible for any officer to be physically present in two places at once.

A Displaced Commander is an officer who possesses authority, yet is not physically present at his or her command. Consequently, the decision must be made where the Concurrent Commander will be physically located. A Concurrent Commander must choose one of three options. The first option is to be a Traditional Commander for one

organization and a Displaced Commander for the other. The second option is to split the physical presence and be a partially Displaced Commander for both organizations. The final option is to physically be at a third headquarters element and command both organizations from long distances. This would occur, for example, by keeping the flag officer in Washington, DC to fight the budget battles while leading two commands not located in Washington, DC.

A Displaced Commander is then presented with a decision to either maintain a virtual command presence or to delegate near total command authority to the ranking military member while not physically on-site. The traditional military leadership paradigm dictates that the Commanding Officer accept the latter choice, therefore becoming an Absent Commanding Officer while the Deputy or Executive Officer assumes command.

Figure 4 illustrates a graphical representation of position within the Virtual Commander context. The illustration also provides a summary of the working definitions used in this thesis.

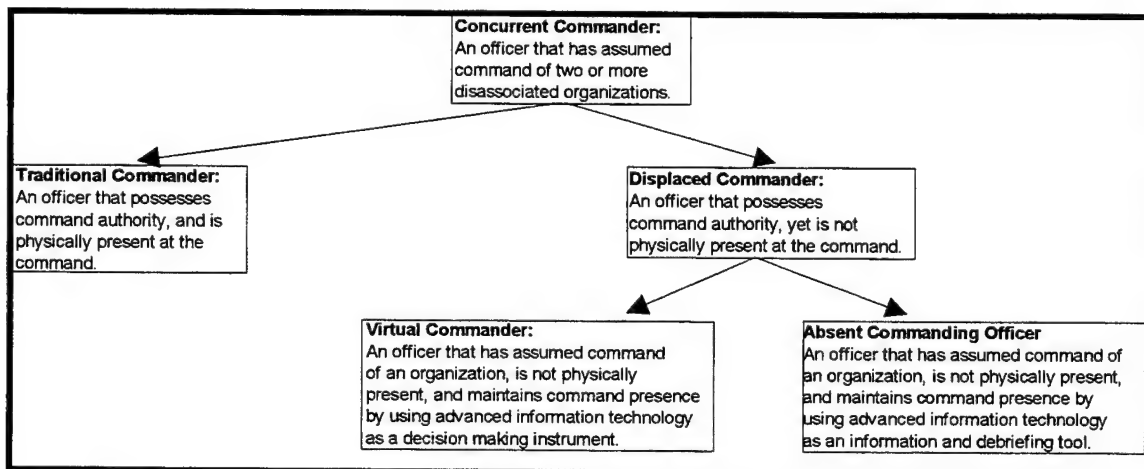


Figure 4. Definitions and Graphical Representation for Virtual Commander

2. Virtual Commander

A Virtual Commander is an officer that has assumed command of an organization, is not physically present, and maintains command presence by using advanced information technology as a decision making tool. An Absent Commander uses the same technology

but only as an information and debriefing instrument. A Virtual Commander must aggressively press subordinates to maintain the same information links whether the commander is physically present or not. If not, the traditional military leadership paradigm dictates that decision making responsibility will default to the ranking military member physically present. Factors that affect the decision to conform to a virtual command presence include leadership style, individual comfort for advanced information technology, access to advanced information technology, and the type of command.

Officers that choose a virtual command structure must trust staff personnel to maintain communications, filter extraneous information, and enforce the strategic vision of the Commanding Officer. This structure may have a dramatic effect on the leadership style of a Commander. If a Commanding Officer has a centralized command style and requires all information to be screened personally, adaptation to a virtual command structure may be extremely difficult.

In a concurrent command structure requiring a virtual command presence, efficient time management is essential. Functions may have to be decentralized so that the Commander can focus on the most important tasks, especially if the Commander has been assigned as a change agent to correct command discrepancies and introduce a new environment. In addition to changing organizational functions, personal convictions may also present implementation problems.

A Displaced Commander may not feel comfortable relying on advanced information technology. There is a prevalent culture in the U.S. military that expects redundancy and security for modes of communication. If a Commander does not have experience with computers or is not familiar with information technology mediated communication, the implementation process for a virtual command structure may be hindered by feelings of doubt or lack of knowledge.

Complicating the equation even more is whether or not the Displaced Commander has access to advanced information technology. Purchasing, operating and maintaining the necessary equipment is very expensive, and some commands do not have an adequate budget to justify implementing it except out of necessity. Fortunately, the price of

acquiring current technology will decrease as the equipment ages and is replaced by faster and better machinery.

D. GEOCENTRIC MANAGER

Virtual Command is not limited to military application. In fact, geocentric multinational corporations have diversified global operations that are controlled by a centralized executive cadre at headquarters in the home country. "Geocentric executives make strategic decisions that affect worldwide operations, they delegate little authority to overseas managers."⁶ This type of organization requires superior information systems to monitor and control international operations.

There are many other requirements to maintain an efficiently operating system. Geocentric fundamentals are exceptional management techniques that can absorb and coordinate decisions among many senior personnel. Therefore, each executive team must have an elaborate network of staff experienced in host-country operations. A Virtual Commander must maintain such a structure to reinforce strategic vision and Commander's intent.

Competent staffing and information technology management is essential for a Virtual Commander to maintain command presence. A strong staff allows a Commander to be away for longer periods of time with little degradation of strategic focus. Any weaknesses in personnel will quickly be obvious to the entire organization. Professional skills of the staff must include adept and creative technology management. Current advanced information technology offers the promise for this system to work, but a Commander must have adequate skills in a staff to operate and maintain it.

⁶David H. Holt, Management Principles and Practices (Englewood Cliffs, New Jersey: Prentice Hall, 1993), 72.

IV. STAFF

The interviews and observations conducted for this thesis showed that a Virtual Commander relies on immediate staff more than a Traditional Commander because of physical absence from the organization. Therefore, the requirements of the Virtual Commander's staff are expanded and demand more attention to detail. To maintain a virtual command structure, staff officers must be more efficient, creative, and determined. This chapter discusses the responsibilities of a staff officer under the direction of a Virtual Commander. The specific roles of the Executive Assistant/ Executive Officer, the Aide, the Chief of Staff, the Flag Secretary, and the Flag Writer in this case study are based on observation and interview analysis. Tools are described that are used to enhance the communication flow and the Commander's sphere of influence. Finally, the process of change required for a virtual command structure is analyzed.

A. RESPONSIBILITIES OF NAVAL STAFF OFFICERS

All staff officers have two primary duties. The first duty is to provide constant lines of lateral and vertical communication throughout the chain of command. Maintaining continuous liaison is critical to any staff officer, even more so for immediate staff of a Virtual Commander. The second task of a staff officer is to support the Commanding Officer in all capacities. This broad area includes operational, administrative, tactical, technical, and personal assistance. Staff officer commitments may or may not be formalized by the Commanding Officer. These responsibilities are dependent upon the personality of the Commanding Officer because each Commander prioritizes differently. In a virtual command structure there is more emphasis on administrating daily operations, maintaining Commander's intent, reinforcing the Commander's sphere of influence, and scheduling the Commander's time and facilities.

B. TEAMBUILDING AMONG NAVAL POSTGRADUATE SCHOOL LEADERSHIP

The Naval Postgraduate School executive leadership had over one year to work together. The staff members established a cohesive working relationship and considered themselves a strong team internally as well as laterally with the executive team. In addition, the two personnel traveling with the Superintendent established a good working relationship with the Marshall Center military staff, thereby easing the transition to the new command philosophy for both the organization and the Director. Staff personnel rely on one another for completing tasks and staying on top of operations. In this case, trust allows the Commander to concentrate on more important issues, such as strategic focus, especially since time management is critical.

The Superintendent of the Naval Postgraduate School used the first year of command prior to the assumption of the role of the Director for team building and strategic focus. A majority of those interviewed (11 of the 15) at the Naval Postgraduate School stated that one of the primary reasons they can complete their duties to the satisfaction of the Superintendent is the time spent establishing relationships with the Commander during that first year. The Flag Officer had established a strategic vision and as one staff member said, "a mature organization to do what we have to do. Could we do this with a new [Flag Officer], it would be difficult... but the previous year was time well spent establishing command focus and strategic vision." A goal of a strategic plan is to confirm command focus of effort and enforce initiatives that have been established. The staff and executive team in this case study have established a firm understanding of the Commander's intent.

Naval Postgraduate School staff have assumed more responsibility and make more decisions so that the Virtual Commander may use time more efficiently and specifically focus on more important strategic issues. In some cases, the product received by the Flag Officer is more refined than before Concurrent Command because it has been cycled through more layers of the Naval Postgraduate School chain of command. The downside is that sometimes it takes more time than before the Superintendent assumed command of

the Marshall Center to establish a finished product, and the Flag Officer may not like the result. Before assuming command of the second organization, the Commander would have had input during the process. Filtering may provide more streamlined information, however, it presents time demands not confronted before. The interview subjects agree that the rate of rejection by the Commanding Officer is minimal because all the subordinates are "knowledgeable on the [Flag Officer's] methods and know the Superintendent very well because [the Flag Officer] was there for over a year. So you know exactly what the Superintendent wants and what's appropriate." According to the interview data in this case study, the virtual command structure is working well in regard to decision making and performance of subordinates.

C. RESPONSIBILITIES OF THE VIRTUAL COMMANDER'S STAFF OFFICERS

All the staff officers in this analysis similarly described their responsibilities. These duties are to "do whatever it takes to make the [Flag Officer's] life easier." The Executive Assistant at the Naval Postgraduate School and the Executive Officer at the Marshall Center manage the staff in their respective organizations. Their duties include coordinating policy issues, resolving things at the lowest level, and working behind the scenes so the Flag Officer does not have to get involved. These "Chiefs of Staff" also account for making sure the Flag Officer is presented with all sides of an issue so the appropriate decision can be made.

The Aide's job, as described by another military officer, is to focus on the minute details of maintaining schedules and daily occurrences of the Flag Officer. Further, this officer added:

The Aide is pretty much a focus job on the [Flag Officer]. Wherever the Flag is, that is where the action is. When at the Naval Postgraduate School, the Aide is used minimally for other administrative jobs. But not to the extent that we notice when [the Officer] is gone. When the [Flag Officer] is traveling, the Aide accompanies. Keeping the [Flag Officer] happy is a full-time job. Everything from taking stuff to the cleaners, to making personal appointments. One of the primary duties is travel arrangements. This [Flag Officer] travels more than previous Superintendents. Coordinating the travel is not just getting from here to there. It's

here to there, right time, right airplane, right seat. And, when you get there you do this meeting, this meeting, this meeting. And the Aide must have the read aheads, and have contacted the person the [Flag Officer] wanted to talk to. The Aide must have the package put together, so the [Flag Officer] can go in and intelligently address the problem instead of going "Okay, what do you want." The Aide is a key job for the organization because it makes the [Flag Officer's] job so much easier.

The Naval Postgraduate School staff is hindered because of the absence of two staff members, the Aide and the Flag Writer. Even though the Flag Officer retains the Aide at all times, occasionally the Aide assists with minor daily functions in the office. The Flag Writer, as the senior enlisted representative, also performs various administrative functions for the staff and the command. The physical absence of these two servicemen creates a gap of responsibilities that must be filled by either inexperienced temporary staff workers or by more senior officers. Obvious shifts in job description have occurred as a result of the void of "middle management" on the staff in the virtual command structure.

Office work increases dramatically when the Superintendent returns to the Naval Postgraduate School. Essential items are submitted to the Commander through electronic mail, facsimile, and Federal Express however, there is a significant decrease of the use of these instruments prior to the Flag Officer's return to Monterey. The week before the Superintendent returns, non-essential paperwork is cycled through the office and placed in the Commander's in box. Electronic mail analysis (presented in the next chapter) confirms that the number of electronic messages is reduced as the actual paperwork accumulates in the Flag Officer's in-box showing that messages are communicated through memoranda instead of electronic mail. This material is usually informative papers that keep the Superintendent up to date on agenda items. Location does not negate information flow from the staff to the Commander. "Critically important information, [the Flag Officer] gets as soon as possible, which is negligible compared to before [the assumption of the second command]", a senior staff member noted.

Upon return to the Naval Postgraduate School, the Superintendent, reviews all the dated paper work. The staff prioritizes the items in order of importance, but there is still a large administrative burden. A non-staff member noted, "part of the frustration the [Flag

Officer] must feel is to compress a month's worth of work into 5 or 6 days. In addition, there is a fatigue factor for those people on the staff." The staff adapted to this by retaining signature authority of the Acting Superintendent up to the point when the Actual Superintendent walks through the office door. Therefore, the Acting Superintendent maintains administrative cognizance, directed by Naval order, on the organization, allowing the Actual Superintendent to focus on more strategic issues upon return to the Naval Postgraduate School.

D. VIRTUAL COMMANDER STAFF ENHANCEMENT

To enhance the decision making processes, the Commander and the staff implemented a *Weekly Action Report Plan* (WARP). The WARP is used as a briefing document for the Flag Officer during the absence from the command. Naval Postgraduate School personnel also use the WARP as an information tool to notify other departments of their tasks in process. Interviewees were indifferent on the use of the WARP. A civilian member stated that these types of reports can waste time instead of saving it, "by placing too much emphasis on writing input" instead of doing the task. One military member hopes the WARP goes away when the Commander returns to command only the Naval Postgraduate School. Conversely, some interview subjects thought that the WARP was a good instrument for information accountability.

The Flag Officer has also established an impressive span of influence among subordinates. Staff personnel are empowered to make decisions without fear of severe reprimand. The Superintendent established a conducive working environment that seems to create confidence in staff personnel to work exceptionally well during a period of traumatic change. This environment "makes a strong case for the potential of self-managed work teams and the elimination of traditional forms of supervision."⁷ This also promotes a positive atmosphere that has allowed staff members to grow professionally.

⁷Reuben T. Harris, "Think Spans of Influence, not Spans of Control", in The Tom Peters Group Update, (Summer 1991, Volume 1, Number 2)

E. PROS AND CONS OF VIRTUAL COMMAND IMPLEMENTATION ON STAFF PERSONNEL

One reason this case study is unique is because of the nine time zones separating the two commands. The Virtual Commander utilizes this difference to benefit both commands. The gap allows the Naval Postgraduate School staff to make "chops" or input corrections on administrative items during the workday while the Superintendent sleeps in Germany. Before the completion of the workday, the Naval Postgraduate School staff use electronic mail or facsimile to send the product to Germany for the Commander to make cuts. This enables an almost continuous rotation of personnel resources while completing several products.

We submit to the Superintendent late at night so to have the revision first thing in the morning when [the Flag Officer] was fresh and then [the Flag Officer] would have all day to look at it while [the Naval Postgraduate School staff] was sleeping. Then [the Naval Postgraduate School] staff would come in early in the morning and call to ask how it looked. We would work those changes during our workday, then send it back the next morning the [Flag Officer's] time. This is how we work the big issues. It is nice to have the 9 hour time difference. It makes for long days but it allows [the Superintendent] to digest the material and let the home staff work the issues when [the Flag Officer] is sleeping.

Another positive aspect of the difference in time zones is the location of the Commander. Three weeks of the month, the Commander is located in Germany, which is 6 hours ahead of Eastern Standard time. Since flag level commanders often interact with seniors and peers in Washington DC, the location of the virtual command structure in this case allows the Commander to be 6 hours ahead. Therefore, when tasked to complete a report, the Naval Postgraduate School staff immediately works on the initial product, and presents it to the Commander, who in turn can send the finished product to the requesting agency. The benefit in this circumstance is that the Commander and the staff can work 16 hours continuously on hot issues.

There are also several negatives of the 9-hour time zone difference. The staff personnel, at both commands, have "longer workdays." As mentioned in the previous paragraph, the staff at the Naval Postgraduate School arrive earlier so that they may

overlap with the Commander in Germany. The staff in Germany work later for the same reason. In addition, personnel that are not associated with the virtual command structure feel obligated to work longer hours because of the attitude that the "Boss" is working late, so must I.

Time zone adjustments also contribute to the fatigue of the Concurrent Commander and the staff. The Concurrent Commander has the same responsibility for both commands and feels obligated to work equivalent hours to ensure an equivalent sense of commitment. This doubles the amount of work for the Commander and, in turn, the staff. The 9-hour difference in this case study allows the Commander and staff to work two longer workdays. In this case, an outside civilian executive noted that the Naval Postgraduate School staff "hours increased. They used to have only 10-hour days, now it seems they have 12-hour days."

F. SIMILAR MILITARY ACADEMIC ENVIRONMENTS

The Marshall Center and the Naval Postgraduate Schools are military academic institutions. Similarities allow the virtual command structure to thrive in this environment. The first similarity is purpose and missions of the schools. Although not specifically focused on the same educational goals, the schools will greatly benefit from exchange of ideas, inter-faculty transfer, and improved video tele-education. In addition, staff can "speak the same language" while relating to one another. The Aide and the Flag Writer, realize the similarity of organizational goals. Therefore, with the same type of organization, Virtual Commander implementation has been greatly accelerated.

The second similarity concerns the utilization of information technology to enhance the academic environment. The Internet has become a powerful tool for academic research. Academics may not have a dependence on information technology, but this new resource provides the scholars a new medium to exploit. In 95 percent of the interviews of the Professors and Deans at the Marshall Center and the Naval Postgraduate School, the personal computers were operating and the interviewees said they utilized their computer several times daily. Acceptance of information technology creates an

atmosphere for the Virtual Commander to thrive because subordinate personnel are comfortable using computers and artificially mediated communication.

V. INFORMATION TECHNOLOGY

A. INTRODUCTION

Successful information technology management is vital for the Virtual Commander. Technology has the capability of sustaining lines of communication between the Virtual Commander and subordinate personnel. The purpose of this chapter is to describe the impact of advanced information technology on the implementation of a virtual command structure. Analysis is based from observation and interviews with the personnel at the Naval Postgraduate School and the Marshall Center.

This chapter provides a general background of the intended use of information technology tools in the Naval Postgraduate School case study. A literature review describes studies on media richness, the effects of status labels, group interaction, idea generation, and decision making in computer mediated environments. Then, qualitative and quantitative data results from the case are presented to determine the impact of advanced information technology on this virtual command system.

Naval Postgraduate School staff use a broad range of information tools to maintain communication with the Commander. These tools are video tele-conferencing, audio conferencing, telephone, electronic mail, facsimile, Postal Service mail, and Federal Express to communicate. The Superintendent employs these devices as a decision making instrument or an information mechanism. Video Tele-Conferencing (VTC), audio-conferencing, and telephone conversations are used as briefing mechanisms and as decision making tools for the virtual command structure at the Naval Postgraduate School. When the conferencing methods are used they are scheduled events and planned well in advance of the event. Audio-conferencing was implemented because of technical difficulties with VTC. Subordinate personnel use the telephone for essential tasks and for immediate access to the Commander.

Information mechanisms include electronic mail, facsimile, Postal Service, and Federal Express. Electronic mail is used to transfer bulk administrative correspondence and to allow instant access to any level in the chain of command for non-essential

material. The facsimile (fax) is used for read-ahead information used in VTC briefings and immediate transfer of important documents. In this case study, U.S. Postal Service is employed for non-essential paperwork going between the two organizations, and for professional mail addressed to the Commander. Federal Express (FedEx) is used for essential administrative material and original paperwork that needs the Commander's signature and direct review.

Costs are associated with these transactions. Staff personnel attempt to optimize resource capability against monetary constraints. However, computer-mediated communication has several layers of cost that must be analyzed. This study does not conduct a complete cost benefits analysis, however, basic introductory figures in this chapter are presented so that the reader may better understand the utility for the variety of resources available to this Commander. In this study, computer-mediated communication consists of video tele-conferencing and electronic mail.

Basic implementation charges are also incurred with audio tele-conferencing, telephone, and for initial set up of the facsimile. All media in this study incur operating costs. These expenses are dependent on how they are used. Some charges are calculated by the duration and distance covered by the medium, such as phone use from both video and audio tele-conferencing and telephone. Postal and FedEx costs are dependent on the weight and distance of the shipment. Each command had electronic mail use prior to the assumption of the second command, therefore set up charges were not incurred. Both institutions pay server maintenance and operation fees, however these expenses are paid regardless if there is a Virtual Commander.

B. LITERATURE REVIEW

1. Media Richness

The method of communication can be almost as important as the information itself. "Executives often fail to realize that both sending and receiving information through a

communication medium is a decision that affects the meaning of the message.”⁸

Messages can be distorted or enhanced by the selection of a certain medium. As such, each method of communication has features that make it acceptable or unacceptable for effective dialogue. In this case study, the Commander and staff select certain media for specific functions. For example, bulk information is distributed through electronic mail, and important conversations occur over the telephone or with video tele-conferencing. Interview data suggest that there is a preferential method of communication for specific agenda and non-agenda material. These preferences will be explained later in the chapter.

Media may be characterized by the degree to which they can handle multiple information cues simultaneously, facilitate rapid feedback, and establish personal focus. Lengel and Daft define media richness as a hierarchy based on the composite of these characteristics. “The more learning that can be pumped through a medium, the richer the medium.”⁹ A face-to-face dyad is the richest medium because of the ability of the participants to convey direct experience, multiple information cues, immediate feedback, and personal focus. VTC is the second richest medium in this scenario because it provides the same capability with a decrease in information cues. VTC lacks the element of “being there.” In addition to not “being there,” telephone conversations also lack social cues such as eye contact, facial expression, and body language. Written media is considered a lean media because it conveys even fewer social cues than visual media.

Written media is ranked on the media richness scale according to several variables: the time of feedback, the tone of discussion, and the accessibility of the audience. In this case study, all relevant personnel (to include students) at both commands have access to their own electronic mail account. Access, retrieval, and storage of electronic mail cause it to be ranked high on the media richness for written material. The facsimile is a rich medium because of immediate feedback potential; however, an inability to directly access all personnel with facsimile equipment limits the richness level. The staff offices at both

⁸Lengel, R. and Daft, R. “The Selection of Communication Media as an Executive Skill” in Readings in Managerial Communications, 1988, p. 33.

⁹Ibid., p. 34.

the Naval Postgraduate School and the Marshall Center have facsimile capability. If necessary, staff can forward the material to a specific location directed for delivery. Federal Express and Postal Service letters are lower in media richness because of a lack of immediate feedback.

Lengel and Daft established a media selection framework for managers to employ when deciding which media to use. For routine messages, the authors suggest lean media because they better match the communication need. Rich media may cause a data glut as excess cues may cause confusion. For non-routine messages, rich media should be applied because lean media allow too few cues to capture message complexity. The authors suggest the use of rich media to extend the manager's presence throughout the organization and conclude that the executive manager must be a media artist.

2. "Computer-Mediated Communication and Social Information: Status Salience and Status Differences"

Weisband, Schneider and Connolly suggest that status labels have more influence on participation and influence during group interaction than do the specific type of communication media used. Weisband's thesis is justified from research conducted on graduate and undergraduate students in three controlled laboratory experiments. Graduate students were placed in groups with undergraduates, were presented business ethical decisions, and then were instructed to discuss the problem as a group. The graduate students were considered to be high status group members and the undergraduates, low status members. The experiments consisted of post-experimental self analysis of influence on group decisions as a function of status and both face-to-face dyads versus computer mediated communication.

Weisband agrees with Berger (1972) and Turner (1987) that group members "often use less relevant physical and social cues, such as race, gender, age, or social standing to categorize people, organize information about them, and develop expectations

about their behavior.”¹⁰ Several articles mentioned in this review also reinforce the idea that social cues may shape the tone and content of group communication patterns and social behavior. Because, computer-mediated communication generally lacks social context cues, or social information about the members of the group, technology may lower inhibitions and barriers to communication. Therefore, if properly used, computer-mediated communication may be a valuable tool for encouraging equality.

Although not analyzed in a military scenario, Weisband’s study has considerable relevance. The authors experimented with both anonymity and known identities of group members. In this case, the Virtual Commander is acutely aware of the status of the personnel in group discussions using both video and audio teleconferencing. Status positions are also known in correspondence on the telephone and electronic mail. Therefore, social status may counter some negative attributes associated with information technology mediated communication because the Commander sets the tone and content of group and individual meetings. If the Commander allows media to affect the content there may be a shift of power among the participants of the meeting.

3. “Electronic Meeting Support: The GroupSystems Concept”

Valacich, Dennis and Nunamaker suggest that Electronic Meeting Support (EMS) technology has the “potential to dramatically change the way people work together by effectively supporting larger groups, reducing meeting and project time, and enhancing member satisfaction.”¹¹ The authors support this argument through an extensive literature review and experimentation at the University of Arizona. Electronic Meeting Support is an information-technology based environment designed to support group meetings. The authors state that typical tasks that groups accomplish are communication, planning, idea

¹⁰Weisband, S., Schneider S., and Connolly T. 1995. “Computer-Mediated Communication and Social Information: Status Salience and Status Differences”. Academy of Management Journal, 38: 1124.

¹¹Valacich, Dennis and Nunamaker. 1991. “Electronic Meeting Support: The GroupSystems Concept. International Journal of Man-Machine Studies. P. 261.

generation, problem solving, issue discussion, negotiation, conflict resolution, systems analysis, and collaborative group activities.

Valacich approaches the problem of analyzing group work by measuring productivity. The authors build on previous studies of product losses and gains. Productivity can be altered by a series of factors that may increase or inhibit productivity. Factors that reduce productivity include production blocking, unequal air time, evaluation apprehension, socializing and domination. Production blocking has three primary effects on the group process. The first is that group members are prevented from verbalizing their ideas because they may forget, or their point may seem less relevant or original later in the discussion. The second effect occurs when members focus on remembering an idea, rather than generating new material. The last factor of production blocking happens when listening to other members speak impedes generating new ideas.

Unequal air time refers to the division of actual verbal communication time among the members of the group. Evaluation apprehension may impede group work because group members may be afraid to voice their opinion because of negative reaction or poor acceptance of the idea. Socializing inhibits group work because the member's attention is not focused on the task at hand. However, the authors suggest that a certain amount of socializing builds cohesion and teamwork. Domination occurs when one member exerts undue influence in meetings degenerating the work process. The goal of group leaders is to decrease these inhibitors and increase any potential gain.

Valacich studied idea generation and decision making in Electronic Meeting Systems. The researchers studied three group sizes maintaining anonymity on electronic brainstorming tools that allow the participants to engage in separate conversations. The set up allowed the participants to randomly share ideas with the entire group. The conclusion of the work is that participants found that Electronic Meeting Systems with large groups (18 members) are more productive than medium size groups (9 members), which in turn are more productive than small groups (3 members). "These findings contrast sharply with the productivity and satisfaction findings of previous non-EMS-supported studies, which have generally found larger groups to generate no more ideas

than smaller groups, while being less satisfied.”¹² Valacich noted that previous research found that anonymity neutralized group status differences and improved productivity. Decision making rated higher than non-electronic meetings, however electronic meetings facilitate larger and faster meetings. The results are that EMS allows for more equal participation and had higher levels of satisfaction among group participants.

Valacich concluded that when using EMS a group leader should have a “feasible project schedule for the accomplishment of his or her group’s objectives,” larger group meetings improve effectiveness, and that “the public display must be positioned so that all group members have an unobstructed view of the group memory. Room layout options are constrained by the maximum group size, and as the maximum group size is increased, the positioning of workstations becomes more complicated.”¹³ The authors conclude that technology has the potential to dramatically change the way the people work together. This has relevance in this case because a standard meeting procedure was established by the Superintendent for over a year prior to the assumption of the second command in Garmisch.

4. “Media Space and Communicative Asymmetries: Preliminary Observations of Video-Mediated Interaction”

Christian Heath and Paul Luff discuss their research concerning interpersonal communication in an information technology mediated communication environment. Specifically, the authors suggest that “audio-visual technology introduces certain asymmetries into interpersonal communication that can transform the impact of visual and vocal conduct. These communicative asymmetries may be consequential for the design and implementation of audio-visual infrastructure used to support informal sociability and

¹²Ibid., p. 271.

¹³Ibid., p. 277.

collaborative work.”¹⁴ Heath and Luff describe aspects of video-mediated co presence and conversation and the consequences associated with this technological design.

The Heath and Luff article reviews previous research concerning the relationship to the production and receipt of face-to-face communication. Non verbal cues have been studied both as a compliment to verbal communication and separately as a “various mean through which social actions in interaction are accomplished.”¹⁵ Interactional behavior is addressed as part of the situation from which the communication is derived. “The production and impact of visual conduct in social interaction clearly demands that participants are visually accessible to each other.”¹⁶ Audio visual and less rich forms of communication lack social cues that enhance conversation, however video-mediated communication allows the participants to observe these cues over the video monitor.

Heath and Luff suggest that technology will support formal and informal collaboration if users can control access to one another and not invade the “privacy” of other individuals. Success of technology will depend on the establishment of virtual presence that “supports the delicate and systematic organization of interpersonal interaction and collaboration.”¹⁷

Each of the articles reviewed in this thesis demonstrate previous research of information management and the impact of mode of communication within groups. These are applicable to this study for specific information tools that explain why certain phenomena have or are occurring. Specific data analysis will be addressed in the next section.

¹⁴Heath, C. and Luff, P. “Media Space and Communicative Asymmetries: Preliminary Observations of Video-Mediated Interaction” in Human Computer Interaction, 1992, 7, p. 315.

¹⁵ Ibid., p. 318.

¹⁶Ibid., p. 319.

¹⁷Ibid., p. 344.

C. TOOLS OF THE VIRTUAL COMMANDER

1. Video Tele-Conferencing

Video tele-conferencing has been used in a military environment for several years. In fact, prior to the need for VTC to maintain a virtual command presence of the Superintendent, the Naval Postgraduate School used video tele-education for several academic and briefing applications. The necessity for long distance education facilities and the proximity of the Naval Postgraduate School to Silicon Valley precipitated the development of a formal VTC classroom. The previous experience with subordinate Naval Postgraduate School personnel implementing this technology greatly aided the Superintendent in instituting tools to retain the strategic decision making process.

None of the interview subjects think that VTC is better than a traditional meeting. Interviewees stress the need for social cues that enhance presence at the meeting. However, the majority of the interviewees believe that it is important for the flag officer to attend the meetings in some capacity. Most participants agree that the Superintendent has retained the status role as the group leader during the video tele-conference.

The first Naval Postgraduate School Executive Board (NEB) meeting after the Superintendent had returned in late January, the members openly discussed issues and set the agenda for future meetings. One senior civilian member voiced his lack of comfort with addressing any issue in front of the NEB without the flag officer present. When questioned further about this, the member stated that he did not have a problem addressing the flag officer during a VTC, as long as the Superintendent was virtually present at the meeting. This attitude confirms that the Superintendent has retained the essential decision making role during the meetings, no matter where the flag officer's physical location is. The importance of hierarchical position in this scenario supports Weisband's argument that status labels have more influence than media on group participation.

Interviewees mentioned several negative attributes of video tele-conferencing. The first drawback for this study is the quality of transmission. Naval Postgraduate School's equipment has an uncomfortable pause after each meeting member speaks. The time delay in transmission appears to disrupt meeting flow. The discontinuous conversation is referenced by Heath and Luff as a factor that may transform the impact of the message conveyed. However, several experienced board members mentioned that they compensated for the breaks by mentally preparing for this technological drawback. Technology advancement may soon fix this problem at affordable rates.

An observation of this case provides another negative impact of VTC. The Naval Postgraduate School VTC meetings seem to be a series of monologs between personnel waiting to speak to the Superintendent as opposed to an interactive group meeting. Traditional meetings with this same group are observed to be more lively and conversant. Another impediment is that the microphone at the Naval Postgraduate School does not capture secondary conversation, which is frustrating for the Virtual Commander. This is a primary reason why video tele-conferencing is not as rich as face-to-face conversation that occurs at traditional meetings. Also, the participants of the VTC do not look at who is speaking, instead the members primarily observe the monitor, that is, they look at the Superintendent.

Both a negative and a positive attribute is that NEB video tele-conferences are shorter in duration than traditional meetings. The average length of a VTC is approximately one hour compared to over three hours for a traditional meeting. A negative point associated with the shorter duration is that the members leave directly after the meeting has occurred. However, during a traditional meeting it is observed that members break into small groups and interact as teams during the breaks. The lack of small group interaction may have an adverse impact on team building and coordination for the executive board. On the positive side, members realize that time wasted is money wasted. Information seems to be more compressed and more focused. The frequency of executive board meetings is about the same, about one per week.

The final liability is the cost associated with video tele-conferencing. Naval Postgraduate School equipment requires three commercial lines to link audio and video

transmissions from Monterey to Garmisch. The cost of installing these lines was \$823.50. In addition, the Naval Postgraduate School pays the bill for the VTC because it is considerably less expensive for the Monterey staff to establish the communication link because of lower telephone rates from the United States. The cost for the link averages about \$3 per minute per line. For a 60 minute meeting the cost is approximately \$605.30 depending on the time of day the VTC occurs. The commands are experimenting with transmitting video meetings by using the Internet as a method of transfer. The costs of Internet use are minimal because both commands utilize servers for standard electronic mail and Internet use for the faculties, however there are more serious video resolution liabilities involved. Redundancy and security of transmission may also impede implementation throughout the military of using the Internet as a tool. This topic is discussed later in this thesis.

2. Audio-Conferencing and Telephones

The Naval Postgraduate School uses two forms of audio media maintaining a virtual command structure. The first, audio-conferencing, was implemented because of technical problems with the video tele-conferencing equipment. Telephone transmissions are the second form of vocal media used in this case study. As mentioned before, each serves a purpose as designed by the necessity of media richness and type of message conveyed. Audio-conferencing is used for group meetings, as opposed to standard telephone conversations.

Interview participants are extremely optimistic about the implementation of audio-conferencing for group interaction. Audio-conferencing was established after minor technical difficulties with the video equipment. The audio-conferencing mechanism used at the Naval Postgraduate School is a "spider" microphone placed on a conference table so that all meeting participants can openly speak. Nine of the 15 Naval Postgraduate School interviewees had previous experience with audio-conferencing and felt comfortable conducting meetings with this medium. One participant said that the "spider microphone was a rather simple capability. It probably cost us only a few hundred dollars, if that. It's

a gadget that allows you to talk to a room full of people.” The interview participants had more enthusiastic comments about the audio-conferencing than the VTC. The complimentary feelings may be attributed to experience and comfort level.

The positive attributes associated with audio-conferencing are lower cost, open discussion, continuous discussion, and the ability of both links to hear secondary conversation. Audio-conferencing can be conducted on one commercial or DSN line as opposed to the three required for VTC. This significantly reduces the telephone charges. Contributing to the open and continuous discussion is the familiarity among the members of the Naval Postgraduate School Executive Board. Having a year to acquaint themselves with the Superintendent generated voice recognition among the members. The technological capabilities of the audio-conference allow the spider microphone to be a very productive instrument. The spider microphone does not have a time delay in conversation, which allows continuous flow of discussion. Several interview participants mentioned this as an extremely positive aspect of audio-conferencing.

The VTC negative of not being able to hear secondary conversation is minimized by the audio-conference. Interviewees that had experienced being on the “other side” of VTC mentioned that it was extremely frustrating not to hear secondary conversation. This impediment may cause an individual to feel left out of the group and, therefore, may cause isolation. The spider microphone is able to pick up secondary conversation and thus allows full group interaction.

Telephones are an integral part of this virtual command structure. Staff members from the Naval Postgraduate School maintain continual telephone relations with the Aide at the Marshall Center. Conversations occur early in the morning in Monterey (late afternoon in Garmisch) and late in the evening in Monterey (early morning in Garmisch). Often, staff members contact each other at their quarters in order to ensure communication.

The primary positive attribute for the telephone is accessibility. Everywhere the flag officer goes, there are phones. In addition, communicators can maintain a constant conversation with immediate feedback. DSN provides is inexpensive, however, there are routing problems for the military phone line crossing the Atlantic Ocean. Staff members

state that it is often easier to access each other through commercial services. To reduce charges of phone use, the staff members efficiently use phone conversations with electronic mail simultaneously. Time is not wasted on the phone when the message can be sent with electronic mail.

3. Electronic Mail

Electronic mail provides necessary links that the Virtual Commander can use to overcome time and distance barriers. Electronic mail is an ideal mode of communication in this case study because most correspondence does not require real-time interactions. All interviewees at both the Naval Postgraduate School and the Marshall Center had an opinion about electronic mail (e-mail). Staff personnel expressed the importance of electronic mail to maintain a productive virtual command structure. They also described some of the problems.

Four senior military and civilian personnel had assistants screen their e-mail for inappropriate messages. Most others felt the necessity to access all incoming e-mail messages. The majority of field grade officers believe they received too many electronic memorandums. Senior Marshall Center officers are receiving between one and three hundred messages during a typical work week. Officers in this case study typically screen their e-mails by determining who sent the message and conducting a preliminary content analysis by reviewing the subject line.

E-mail is used as an official source of information transfer without any governing military instruction. No guidelines, format or formal routing procedures, such as for a standard naval letter or memo, for electronic mail exist at either school. A senior military officer stated: "We as a culture have not figured how to do e-mail, from a protocol and an etiquette point of view. Don't bury a tasker in a paragraph in an e-mail. I think e-mail is wonderful as a source of back up information that you can read at your leisure. If you have a task that you want someone to do, pick up a telephone, call them, walk and see them. Go face to face, have a communication. Now we have resolved, you told me what you want, I've repeated it back. We understand the time line and have resolved the issue."

Some cases of "jumping the chain of command," or inappropriately accessing superior officers, are experienced by many senior personnel. All subordinate personnel have access to the executive through e-mail and, as such, it has the potential to flatten the hierarchical chain of command of an organization. This accessibility increases the utility of electronic mail. A message can be delivered almost instantaneously around the world. An impediment for the Virtual Commander is finding where the limitation is between maintaining an open door e-mail policy and observing the chain of command.

Other electronic mail complications arise that may be specific to this case study. There are more adept writers in an academic environment than a traditional military command. Writers that are more capable to provide tactical slant favoring their position. The reader of any type of personal correspondence must be aware of intentional or unintended bias. The virtual command staff must employ redundant and creative means to ensure the Commander receives accurate information.

Quantitative analysis of electronic mail is conducted to show the flow of correspondence to and from the Superintendent over time. Data are organized into six categories broken down into source areas to and from the Superintendent. The categories are immediate staff personnel, Naval Postgraduate School Executive Board personnel, other Naval Postgraduate School personnel (students, faculty), outside professional correspondence, Marshall Center personnel, and unknown sources. Criteria for identifying staff and NEB members are from published rosters of positions within the chain of command. Other Naval Postgraduate School personnel are determined from the return address on the e-mail: @nps.navy.mil. Criteria for identifying outside professional correspondence and the Marshall Center are also from the respective professional electronic mail addresses. Size of the messages is also calculated, however content analysis was not performed.

Data are collected for the period between 23 October, 1996 and 5 March, 1997 for the electronic messages received by the Superintendent of the Naval Postgraduate School. It is important to note that the data analyzed are only from the Naval Postgraduate School account of the Virtual Commander. The flag officer does have an established account at the Marshall Center but data were not attainable at the time of this thesis. Mail received

by Marshall Center personnel occurred only when the flag officer was at the Naval Postgraduate School, however the Commander had access to the Marshall Center account during that period. Therefore, the vast majority of the electronic mail received by the Director from Marshall Center personnel would be through the account established in Garmisch.

a) Electronic Mail Transmitted to the Superintendent of the Naval Postgraduate School

The results of the total electronic mail received are displayed in Figure 4 on the next page. There were 568 electronic messages that were received by the Superintendent during the four month period from Monday to Friday. There were 84 messages that were transmitted by staff personnel, 151 by NEB members, 82 by other Naval Postgraduate School personnel, 218 from outside professional correspondence, 15 by unknown sources, and 12 from Marshall Center personnel.

Figure 5 represents total workday messages. The amount of electronic mail received increases dramatically when the Superintendent is in Garmisch. Messages peak approximately half-way through each stay at the Marshall Center, continue approximately at the same frequency then recede before the return of the Superintendent back to the Naval Postgraduate School. The amount of e-mail transmitted to the Superintendent while back in the United States is considerably less.

The frequency of electronic messages increases during each of the observed periods in Monterey. The amount prior to the assumption of the second command is relatively small compared to that of the two subsequent periods. The flag officer in this case study reads all electronic mail received at the Naval Postgraduate School account every day.

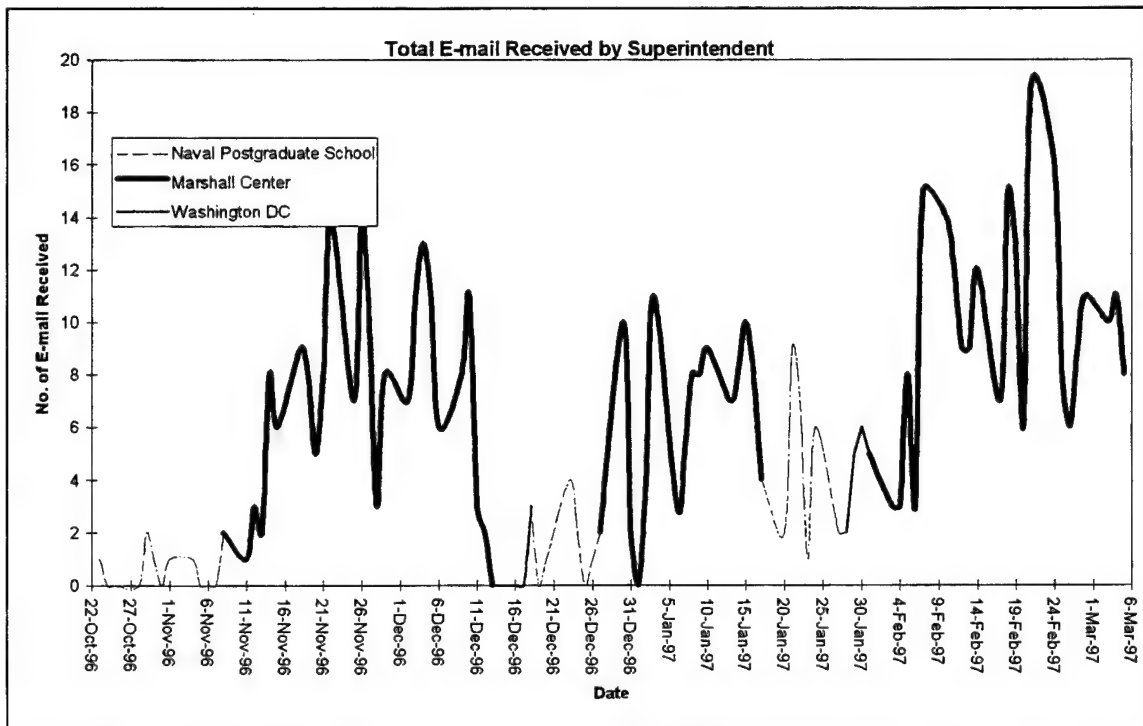


Figure 5. Total Electronic Mail Received by the Superintendent by Location.

Figure 6 on the next page isolates messages transmitted to the Superintendent by all Naval Postgraduate School personnel and non-NPS personnel. The pattern of distribution reflects that continuity of communication when the Superintendent is in Garmisch. The number of electronic mail messages sent by subordinates dramatically increases when the Superintendent is in Germany. The majority of these messages are from Naval Postgraduate School Executive Board (NEB) personnel.

Non-Naval Postgraduate School initiated electronic mail messages decrease when the Superintendent is in Monterey also. An explanation for this may be the reluctance to contact the flag officer while in Germany through other means because of time difference and higher costs.

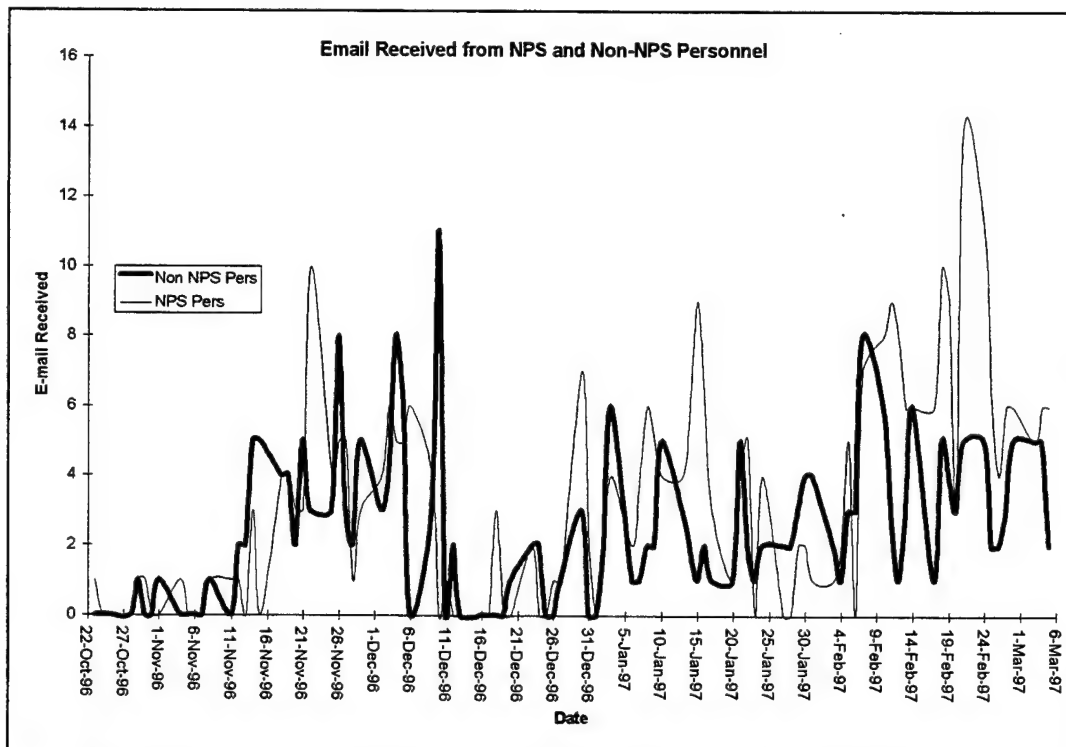


Figure 6. Electronic Mail Received from NPS and Non-NPS Personnel.

The frequency of the total messages received from subordinate Naval Postgraduate School personnel increases during all three time periods in Garmisch until the Superintendent's return to the United States on 14 December, 18 January and mid-March. The trend is depicted in Figure 7 on the following page.

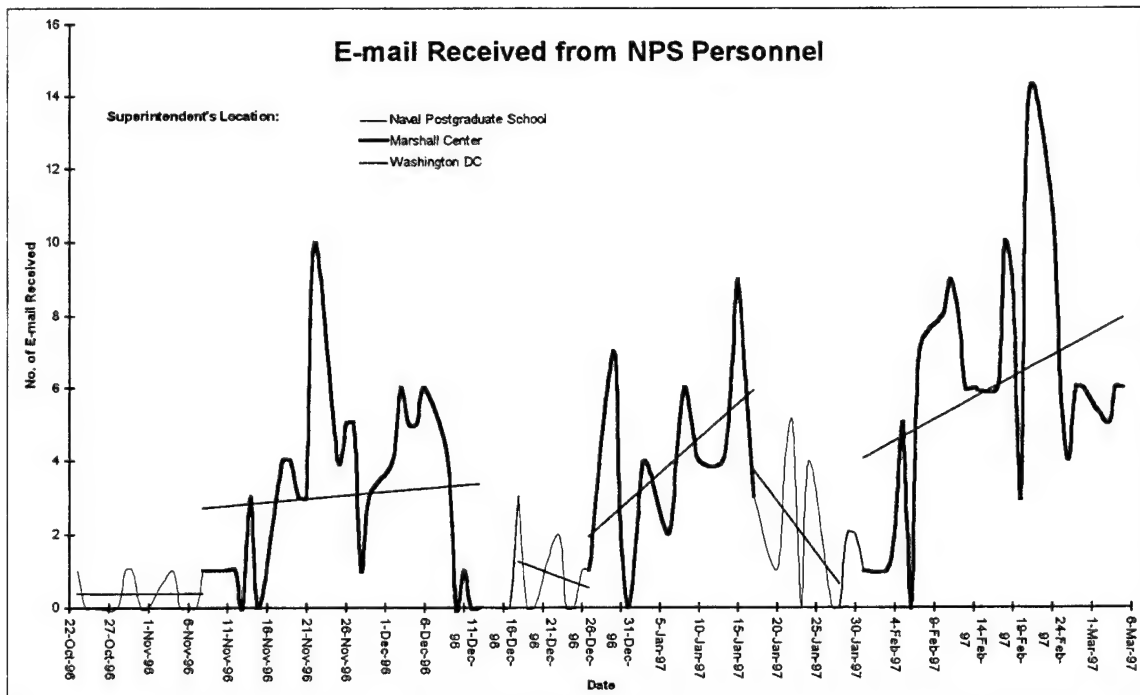


Figure 7. Trend of Electronic Mail Received from NPS Personnel

The trend of electronic mail transmission from Naval Postgraduate School personnel is consistent. Trends are represented by the straight lines starting when the Commander arrives at a particular location. The frequency of messages is flat during the period between 22 October and 7 November. Frequency rates slightly increase with the duration of the first stay in Garmisch. After arriving in Monterey during the Christmas season, the frequency of electronic mail sent to the flag officer decreases with the length of the stay. However, upon return to Garmisch, Naval Postgraduate School subordinates dramatically increase the frequency of electronic messages the longer the Superintendent is away. These trends are consistent for the next two time blocks.

b) Electronic Mail Messages Sent From the Superintendent of the Naval Postgraduate School

Data from Electronic mail transmitted by the Superintendent are compiled from 23 October 1996 to 9 November 1996 and shown in Figure 8. Difficulties compiling the data occur when trying to analyze who the message is being sent to. With electronic mail, users have a capability to send the same correspondence to many different personnel at the same time. In this study, the vast majority of the messages sent from the

Superintendent have several addressees. To compensate for multiple listings, the same criteria for dissemination of received electronic mail is utilized. If the listings overlap, each of the represented categories are credited with a single message. On multiple listings for the same category, the message was counted only once for that category. Multiple and overlap listings occurred frequently for staff and NEB personnel. In those cases, each of these two categories are credited one message per transmission.

Even though there are a limited number of data points, there is one pertinent finding: the Superintendent electronically mailed staff personnel more than all other personnel combined. Data points displayed in the figure represent the total number of electronic mail sent to staff and all other Naval Postgraduate School personnel.

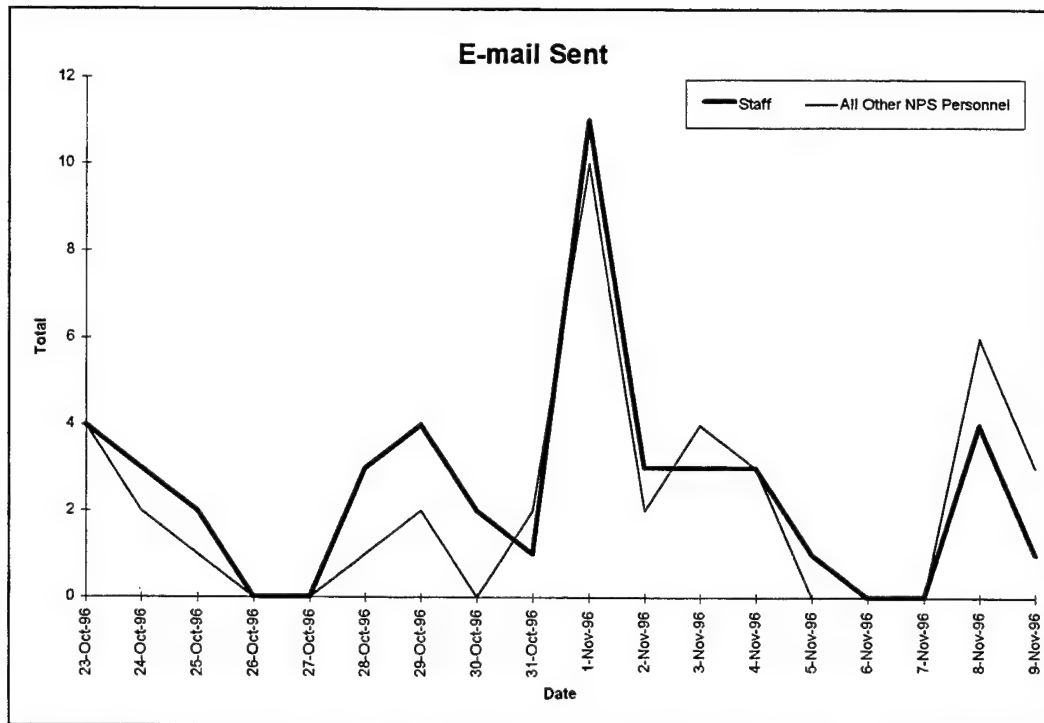


Figure 8. Electronic Mail Transmitted by the Superintendent.

4. Other Information Tools

Original documentation requirements necessitate Postal Service mail and Federal Express. Legal signature requirements of the Commanding Officer inhibit the Virtual Commander concept. Staff personnel have the Commander's signature block, and the Acting Superintendent assumed by direction and signature authority, however, the document may not be perceived to carry the same weight as it would have been if not signed by a flag officer. The transfer of signature authority is required by Naval policy when the Actual Commander is away for extended periods of time. However, some documents require the Actual Commander's signature regardless of location.

Original documentation is the primary positive attribute for Postal Service and Federal Express documents. Negative consequences of the mail services include the time delay associated, higher costs for heavier documents, and longer distances. Federal Express expenditures for the period from March 1996 to January 1997 are displayed in Figure 9 and show that Federal Express was utilized by the Superintendent's office considerably more after implementing the Virtual Command structure in early November. The use of Federal Express is much less after the initial implementation period because of the expenses incurred when documents can be shipped through regular mail or facsimiled.

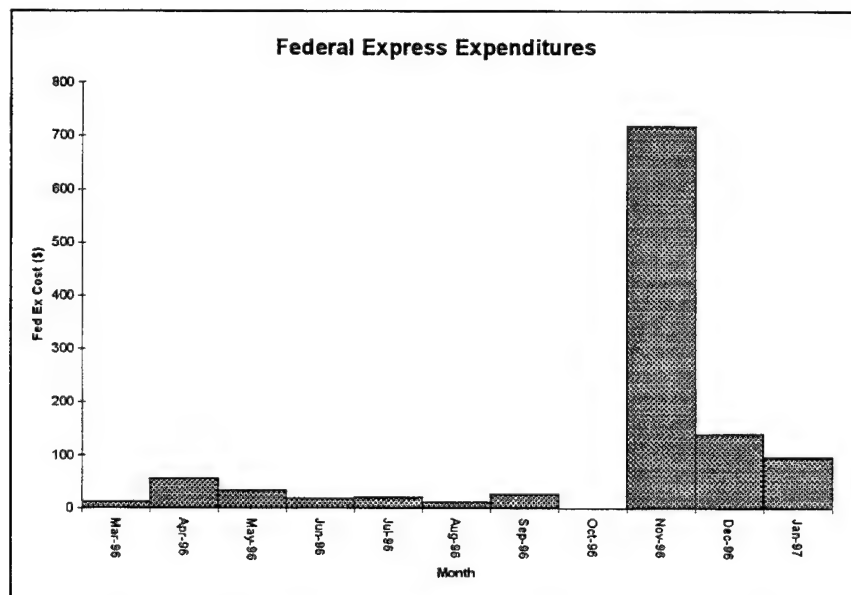


Figure 9. Federal Express Monthly Expenditures.

Expenditures rise dramatically upon the assumption of the second command in early November then subside before the first trip back to Monterey. A pattern develops during the month of January that can be clearly seen in Figure 10. Figure 10 details the costs associated with sending information by Federal Express from Monterey to Garmisch, Germany.

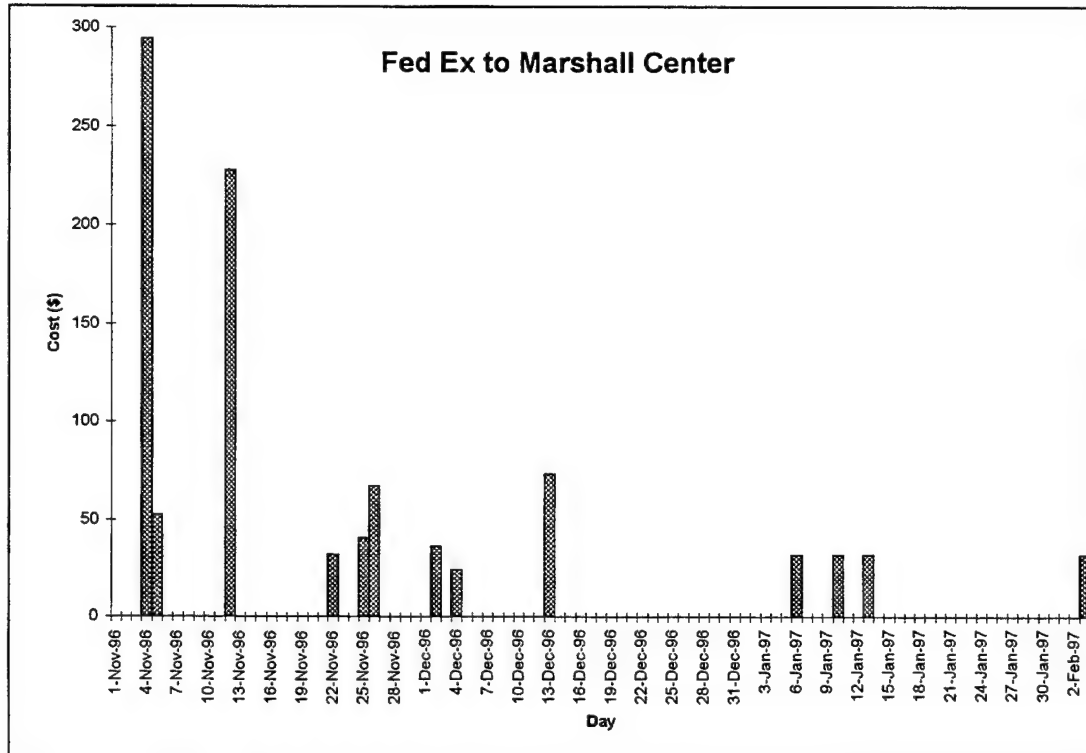


Figure 10. Daily Federal Express Expenditures.

Postal expenditures are not abnormal. The Postal Service costs attributed to the Superintendent's office during the first three months of Concurrent Command fall within the boundaries of the previous three years. The January Postal Service expenses are half of those three years prior. Table 4 outlines the expenditures for postal services for the period between fiscal years 1994 and 1996.

	FY 1994	FY 1995	FY 1996	FY 1997
Oct	94.85	94.96	49.81	96.81
Nov	130.72	198.35	23.21	166.39
Dec	161.54	38.94	199.33	121.74
Jan	156.97	39.63	105.69	71.24
Feb	109.41	67.68	152.51	
Mar	200.8	25.52	147.02	
Apr	57.33	48.06	135.07	
May	40.38	582.01	98.45	
Jun	64.46	108.01	180.97	
Jul	64.36	126.77	251.21	
Aug	116.59	363.32	138.58	
Sep	143.11	81.91	154.22	

Table 4. Postal Service Expenditures.

D. INFORMATION TECHNOLOGY IMPLEMENTATION

There are cultural barriers to successful implementation for virtual operations. These barriers are based on fear of change and trust in the existing situation. Systems in place are difficult to change because "it got us here, didn't it?". This section is intended to further understand cultural inhibitors so that the future Virtual Commander can address these issues before they become a problem.

Investing in technology may be investing in the future of an organization. Nevertheless, there still must be careful investment to avoid throwing money at the newest fad. An organization must be current to stay competitive. "Most resistance, however, will come from experienced, reflective individuals who accept the validity of the virtual responses with unseen nods, but finally say: 'So what? We're already doing that stuff. We have information and telecommunications systems; we use e-mail. We have teams, alliances. We groom strong leaders. What's your point?'"¹⁸ This case study reflects this point almost exactly.

Junior officers are more receptive to Virtual Command because of general acceptance of the computer age. Senior, more experienced officers, related the adoption

¹⁸Ray Grenier and George Metes, Going Virtual, (Prentice Hall: Upper Saddle River, New Jersey, 1995), 171.

of computers to the introduction of telephones. As the junior officer gain seniority, acceptance of virtual operations should be more widely accepted in the culture.

VI. CULTURE

General Bruce C. Clarke stated that “the successful commander in battle is at the critical place at the critical time.”¹⁹ A traditional military leadership paradigm requires the military leader to be physically co-located with his/her command. This cultural aspect is a major barrier for the Virtual Commander implementation. This chapter describes the impact that culture has on the Virtual Commander. A definition of organizational culture is provided and the relevance of military culture is addressed in reference to this case study. Because both macro- and micro- organizational cultures impact the Virtual Commander, they are introduced and analyzed. Finally, a process to change the culture of a military organization is addressed.

The American Heritage Dictionary defines culture as the “the behavior patterns, arts, beliefs, and institutions as expressed in a particular community or period.”²⁰ Vijay Sathe further explains organizational culture as “the set of important understandings (often unstated) that members of a community share in common.”²¹ “Understandings” in this definition is further broken down into values and beliefs. These values and beliefs go beyond stated goals and objectives of the organization. A crucial element in the definition offered by Sathe is that these values and beliefs are “often unstated.” “Beliefs and values that have been held for a long time without being violated or challenged may become taken so much for granted that people are no longer aware of them.”²² However, in this case, the participants are acutely aware of the profound impact that tradition and culture have on the concept of a Virtual Commander.

¹⁹Robert A. Fitton, editor. Leadership: Quotations from the Military Tradition, (San Francisco: Westview Press, 1990), 225.

²⁰The American Heritage Dictionary, 3rd Edition, (New York: Dell Press, 1994), 209.

²¹Vijay Sathe, “Implications of Corporate Culture: A Manager’s Guide to Action” in Organizational Dynamics, (New York: American Management Association, 1983), 329.

²²*Ibid.*, 332.

Culture as a variable in organizational effectiveness is important because the values and beliefs represent basic assumptions and preferences that guide organizational behavior. In short, culture has a subtle, but powerful, influence in organizational life. When implementing a new strategy, structure, or system, a manager must account for the culture of the unit. If not, the new process may meet resistance from subordinates who attempt to retain status quo. Organizational culture has a stronger influence on behavior in agencies with more shared beliefs and values.

A. MILITARY CULTURE

The military has a strong culture. Reasons for this may be as simple as commonality for entry points. All enlisted personnel must go through a recruit phase to become a military member. This is a rite of passage. The recruit depot is a screening mechanism. Those young men and women that do not assimilate into the culture are filtered out of the service before they report to operational commands. The same is true for military officers. Every officer must complete some sort of officer's candidate course, whether it is for 6 weeks or 4 years. Commonality of entry points allows for basic military instruction on what the core values and beliefs are of the organization. The Navy and Marine Corps share the values of "Honor, Courage, and Commitment," for example.

Military organizations also emphasize education and training of all personnel. Military schools provide the services opportunities to heighten traditional military standards and beliefs. Schools train members on how to best prepare and win in war. The warrior spirit is pressed on service members with compliance a necessity. Warfare is the basis for all military action and must be adopted by each service member as part of his/her beliefs. If not, the individual is phased out of the service, no matter which branch of service.

B. TRADITIONAL MILITARY LEADERSHIP PARADIGM

A traditional military leadership paradigm is that the commander must be physically present at his/her command. This philosophy is espoused from the pre-Napoleonic era of warfare. The doctrine requires combat leaders to be at the front of the unit to provide guidance, leadership and personal example. The Commander is supposed to display personal risk, therefore inspiring subordinates to accomplish the mission, without hesitation. This is the basis of traditional military leadership. Great military leaders offer these comments on physical presence.²³

Field Marshal Erwin Rommel said:

In moments of panic, fatigue, or disorganization, or when something out of the ordinary has to be demanded...the personal example of the commander works wonders, especially if he has the wit to create some sort of legend 'round himself'.

General William Tecumseh Sherman added:

Some men think that modern armies may be so regulated that a general can sit in an office and play his several columns as on the keys of a piano; this is a fearful mistake. The directing mind must be at the very head of the army--must be seen there, the effect of his mind and personal energy must be felt by every officer and man present with it, to secure the best results. Every attempt to make war easy and safe will result in humiliation and disaster.

General George S. Patton offered this pearl of wisdom:

If you want an army to fight and risk death, you've got to get up there and lead it. An army is like spaghetti. You can't push a piece of spaghetti, you've got to pull it.

Finally, Sir Arthur Wellesley, Duke of Wellington's secret to success:

²³All quotes are from Robert A. Fitton, editor. Leadership: Quotations from the Military Tradition, (San Francisco: Westview Press, 1990), 225-228.

The real reason why I succeeded in my own campaigns is because I was always on the spot.

The definition of a Virtual Commander offered in this thesis is an officer that has assumed command of an organization, *is not physically present*, and maintains command presence by using advanced information technology as a decision making tool. An officer not physically present at his/her command is clearly violating the traditional military leadership paradigm requiring physical presence.

This leadership paradigm has a profound impact on the implementation of a Virtual Commander. The established order for decision making in the absence of a Commanding Officer is to default the decision to the ranking military member. Historically, the ranking military member is responsible for the maintenance, operation, and mission accomplishment of the command in the absence of the Commanding Officer. Formal administrative turnover is required during peacetime, transferring command authority to the senior military officer. In this case study, there is a formal letter transferring administrative authority published at the Naval Postgraduate School directing the senior naval officer present to assume the position of Acting Superintendent when the actual Superintendent is in Germany.

In general, a profound problem surfaces with this formal transition of authority in a Virtual Commander scenario. The official transfer of authority reinforced by the cultural default shifts the flow of information to the Acting Commanding Officer. Consequently, if the Virtual Commander is to retain the decision making role, s/he must aggressively press subordinates to continue the same flow of information as if s/he were physically at the command. If not, there will be confusion among subordinates on information flow. The worst case scenario would be that the actual Commander and Acting Commander both receive different information, causing them to make contradictory decisions.

Many of these problems were averted in this case because a large portion of the information flowed to and from the Superintendent's staff. Staff personnel utilized the devices outlined in the previous chapter to disseminate information to both the Acting and actual Commanding Officers. Once again, the role of the staff is critical to successful implementation of a Virtual Command structure.

In general, another problem associated with the Virtual Commander scenario may be attempts by a subordinates to achieve personal gain. A subordinate may not like the answer that the Virtual Commander may provide, then approach the Acting Commanding Officer with a different political slant hoping that the Virtual and Acting Commanders do not discuss the issue. Since the Virtual Commander is not physically located with the organization, there may be more attempts to get away with indiscretion. This facet was not mentioned by any of the interviewees nor observed in this case study.

The physical presence requirement of a Commanding Officer may now be nearly impossible to attain. The modern battlefield has now expanded because of advanced weaponry and technological capabilities. In 1415, the size of the Agincourt battlefield was 500 yards. At Waterloo, in 1815, the size of the battle area was close to a two-mile front. In 1916, the Somme offensive had a battle line extended for over 10 miles. General Schwarzkopf directed military units, from different countries, over hundreds of miles of desert during the Gulf War in 1991. This begs the question, in the age of information technology, where is the best place to command? The answer is that the commander should be positioned at the best place to produce the most positive impact on his/her unit. As General Clarke states in the opening sentence of this chapter, the "critical place."

This position may be at the front line, in a command center behind the lines, on a ship off the coast of a hostile land, or hundreds of miles away from the action. Several senior military officers interviewed for this thesis mentioned this contradiction in ideology. Therefore, the traditional military leadership paradigm requiring physical presence may slowly be changing. The advantages of information technology allow the leader immediate access to battlefield intelligence that previous generations of military officers never had. The enhanced capability may prove stronger than the requirement for physical presence.

C. ACADEMIC CULTURE

This case study is unique in that it presents two equally strong cultural communities, military and academic, that may enhance or inhibit the leadership of a

Virtual Commander. Academic institutions may have competing values with respect to virtual command structures. On one side, academics are receptive to research advances and experimentation. On the other side, they are not receptive to sudden change in a system and challenges to standards and criteria. Both cultural aspects profoundly impact the events studied in this thesis.

Every professor interviewed in this case study had a working computer on his/her desk. Two professors even had video tele-conferencing cameras on top of their monitors. Almost every professor mentioned that the Internet provides a vast resource for research material and therefore was receptive to information technology. However, the two professors referred to above had not used the cameras. They were fascinated by the technology and use the software for higher quality resolution for retrieving Internet satellite pictures, but do not feel compelled to use the video equipment. The professors interviewed vastly prefer face-to-face instruction instead of video tele-education (VTE). They feel that standards are not maintained in VTE and that there is an effect on the quality of instruction. These attitudes suggest a cultural bias towards implementing a non-traditional communications network.

The civilian interview subjects had mixed feelings about Concurrent Command. Just as in their military counterparts, the civilian personnel emphasized the need for physical presence. However, this was not as prevalent in the academic culture. Instead, they perceived that the most pressing need for the Superintendent/Director is to maintain and build up funds. "The big thing a [Flag Officer] does here is go out and get students and dollars." This theme was consistent throughout most of the interviews. Some worried about the Flag Officer's capacity to do this job for two organizations. Concern for lack of funding seemed part of the civilian academic culture in this case study and may cause anxiety not previously encountered. This concern is likely to increase the longer the duration of the concurrent command.

D. DIFFUSION OF INNOVATION

Acceptance of a new idea that is contrary to the culture depends on how the idea is conveyed to subordinates. Compatibility of an innovation to the culture has obvious effects in the rate of acceptance. In this case, the concept of Virtual Commander is not overtly compatible with the macro-level culture of the U.S. military, therefore contributors must be added to facilitate the rate of adoption. These aids, such as naming the innovation and positioning the concept at a strategic location may contribute to the acceptance of the idea.

In this case, the implementation of the Concurrent Command structure may have been aided because the idea was sold to subordinates as unique. For example, the phrase "Virtual Commander" may have had impact because it was not realized at these military institutions in this case prior to the assumption of the second command. Therefore, subordinates may have experienced a positive sensation from being a part of a unique change in the military and see this experiment as a glimpse of future military leadership.

In addition, the degree to which the change is perceived as being better than that which preceded it directly correlates to the acceptance rate. "The relative advantage of an innovation, as perceived by members of a social system, is positively related to its rate of adoption."²⁴ Incentives can be used to enhance the rate of adoption. Each organizational leader must determine what is the best mechanism to reward superior performance. Some subordinates in this case feel that several information systems have been improved and made more efficient with the use of technology not before fully realized. In this case, necessity truly is the mother of invention.

E. CULTURE CHANGE

If cultural discrepancies with implementing a new strategy, structure, or system are not confronted properly, the new system will meet opposition. "The problem with these

²⁴Everett M. Rogers, Diffusion of Innovations, (The Free Press: New York, 1962), 218.

internal reactions to external changes is that they focus most of the company's energies on crisis management: morale suffers, risk taking is avoided, research and development investment is reduced, and creative work ebbs. The bunker mentality today merely accelerates organizational demise."²⁵ Senior management must establish the systematic expertise to turn change into a competitive advantage.

"Managers interested in producing culture change must understand and intervene in each of the basic processes that cause culture to perpetuate itself."²⁶ The five processes involved are behavior, justifications of the behavior, cultural communication, hiring and socializing members who fit in with the intended culture, and removal of members who do not. The processes will be analyzed in the context of this case study but are not limited to Virtual Command structures.

The behavior in this case study is the physical requirement of a Commanding Officer. The culture is extremely strong because of the belief that the Commander must be on the field of battle. Even though the Naval Postgraduate School and the Marshall Center are academic institutions, not operational units, the military personnel assigned to these academic commands are combat oriented because of warfare specialties and the assimilation of the military leadership paradigm. The demand for physical presence is decreasing because people see the utility of information technology at operational commands. At the Naval Postgraduate School, personnel are increasingly more comfortable with the absence of the Superintendent, even though there is strong organizational bias contrary to the position.

The executive manager implementing a cultural change must justify why the change is being made. Behavior compliance is not enough, there must be cultural commitment for the change to flourish. "Just because" is not the answer to give. The Superintendent justified the absence by fully explaining the situation to staff, executive board members, faculty and the students. The openness was appreciated, therefore reducing the resistance of subordinate personnel. In addition, the staff and executive

²⁵Grenier and Metes, 176.

²⁶Sathe, 337.

board members have daily interaction with the Superintendent therefore maintaining the flag officer's sphere of influence.

Culture is communicated through explicit and implicit forms. Explicit forms "include announcements, pronouncements, memos, and other communications. [Implicit forms] include rituals, ceremonies, stories, metaphors, heroes, logos, decor, dress, and other explicit forms of communication."²⁷ In this case, the Flag Officer maintained the same explicit forms of communication as were in place before the assumption of the second command. The Superintendent retained personal correspondence with subordinates utilizing personal memos, congratulatory notes, and electronic mail.

The Superintendent has placed considerable emphasis on making sure that subordinates feel they do not have a disassociated Commander. An example attesting to this was a promotion congratulations offered by the Flag Officer of a newly pinned Petty Officer. The Flag Officer was adamant about talking to the Petty Officer and pressed the Monterey staff to make the Petty Officer available for a congratulations via VTC from the Commander. An explicit method used to reduce separation anxiety is interviews published with the Commander in the monthly campus magazine.

As time goes by, the military services are hiring young women and men who are increasingly more comfortable in technological environments. Advanced information technology is introduced to young people in high school, and is most certainly used at the collegiate level. The junior officers and enlisted personnel assimilated into the culture today are going to be the military leaders of tomorrow. At the same time, senior personnel today who are not receptive to computer mediated communication will leave the service. Senior personnel will naturally attrite out of the military allowing vacancies to be filled by the more technological comfortable younger generation. These two occurrences will facilitate the environment that may allow a change in the military leadership paradigm requiring the physical presence of a Commanding Officer.

²⁷Sathe, 338.

VII. STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS ANALYSIS

The purpose of this chapter is to analyze the effect of implementing and maintaining a virtual command structure. Information is presented on the strengths, weaknesses, opportunities, and threats of sustaining a virtual command presence specifically in the Naval Postgraduate School/Marshall Center case. Strengths and weaknesses are usually internal and refer to the present state of the organization, while opportunities and threats are typically external and future oriented. Strengths may also be weaknesses for the commander and the organization. Both organizational and individual commander analysis are presented so that future Virtual Commanders may optimize strengths and opportunities and minimize weaknesses and threats.

A. STRENGTHS

The role of Concurrent Commander enhances the stature of an individual officer. The assumption of a second command at the executive level states that senior military and civilian members believe that a Flag Officer can maintain more than one strategic position. A Virtual Commander reinforces this position by continuing to make decisions when not physically present. Therefore, in this case, selection for Concurrent Command and subsequently maintaining a virtual command presence professionally enhances the service record of the Commander. Offer of a major joint command is rare, therefore assumption of a joint command such as the Marshall Center must be considered as a pivotal event in any officer's career path.

The Marshall Center gains the experience of the flag officer, especially in the field of academics. One of the specific reasons why the Superintendent was recommended for the position of Director was past accomplishments as a change agent at the strategic command level. The Marshall Center profits from the expertise of the Commander. Interview data from the Marshall Center show that this is the primary strength of the virtual command scenario. Subordinates state that the energy and enthusiasm that the new

Director displays is infectious. The interviewees also state that the organization is once again heading in the right direction because of the new Director.

The Flag Officer analyzed in this study gains considerable strategic experience commanding two organizations. Scheduling and prioritization are vital tools for the Virtual Commander. Time management is particularly important because of the necessity to complete the task requirements for two jobs. A strength in the Marshall Center/ Naval Postgraduate scenario is the 9-hour time zone difference. The physical separation allows the virtual commander and the staff to complete tasks and work continuously on projects. The final draft on a task can be completed during the workday in Garmisch, then submitted to higher headquarters in Washington DC.

Both organizations in this case scenario gain because the Commander has contact with audiences heretofore not realized by either command; therefore, the political representation and stature of both commands are improved. The Naval Postgraduate School is "advertised" every time the Superintendent tours an East Europe country fulfilling a Marshall Center obligation. Concurrent positions allow the Commander access to broader audiences increasing mission awareness of both institutions and possibly enhancing the prestige of both schools. This visibility is extremely important concerning military budget facilitation and civilian academic prominence.

The Naval Postgraduate School and Marshall Center are ideal for the implementation of a virtual command presence because of the well-established information technology environment in the currently established. The "tools" were already in place and, in the case of the Naval Postgraduate School, were utilized prior to the assumption of the second command. Video tele-education was implemented before 10 November, therefore the information systems managers had basic skills that enabled ease in transition. All the other media have been used at both commands for some time. In fact, all the students, military personnel and civilian faculty at both commands have electronic mail capability which has contributed to the continual information flow for the Commander. Therefore, the two commands in this case study provide an outstanding experimental environment for the Virtual Commander concept.

The inter-connectivity of the commands further increases the potential for successful implementation. Both academic commands provide similar environments in that the professors are civilians and the support staff are primarily military personnel. Peers in the same billet at the "other" command can and do speak the same language. This arrangement allows faculty coordination especially in the National Security Affairs area. The same commander of both organizations facilitates communication between subordinates. Both commands may have access to each others assets, enhancing mission capabilities of both schools. Professors from the Marshall Center visited the Naval Postgraduate School to establish a permanent professional relationship between the two organizations.

The Naval Postgraduate School as a well established academic institution has much to offer the Marshall Center. The Monterey school has over 50 years of educating military officers, establishing accreditation, and a comprehensive military and civilian chain of command. The necessity for productive civilian/military relations has caused the Naval Postgraduate School to fine tune the working environment for all personnel. In addition, since the Naval Postgraduate School was established, there has been a prominent culture among both student and permanent personnel. This culture as described in the previous chapter provides unstated values and beliefs that guide organizations. The culture at the Naval Postgraduate School has a profound influence on everyday activities, providing a sense of continuity even though the Superintendent is not physically there. The physical separation of the Commanding Officer may not be completely realized because of the culture and the long-term employees at the school.

The Naval Postgraduate School Executive Board members are very familiar with each other and are able to recognize each others' voices during audio tele-conferencing. Long-standing relationships are well established facilitating open communication and a productive work environment. A strong, cohesive relationship exists within the Flag Officer's staff and there is also an atmosphere of mutual respect within the strategic apex at the Naval Postgraduate School. A strategic plan was established prior to the assumption of the second command, providing guidance for subordinates. More

importantly, the strategic plan was enthusiastically accepted by both staff and NEB members, probably because they had an active voice in the decision making process.

Allowing subordinates to make these decisions prior to the assumption of the second command, contributed significantly to the transition into a virtual command structure. It is obvious that the Commander trusted these subordinates. The Virtual Commander must have confidence in the subordinate staff to fulfill command objectives. A strength for the virtual command structure is that it forces subordinates to make decisions and be flexible. Creative implementation of information resources enabled the Superintendent to have continuous information flow throughout the time period observed. Staff development is a spillover of the virtual command scenario.

The Provost at the Naval Postgraduate School increases the chance for successful implementation of a Virtual Commander. The Provost is the senior academic and civilian leader at the Monterey school. The Provost manages civilian discrepancies and is a conduit to the Superintendent for academic personnel. A strong leader, the Provost allows the Superintendent to focus strategically for the Naval Postgraduate School. The Provost has increased his personal interaction with subordinate personnel and external agencies to compensate for the decrease in the Superintendent's personal interaction.

The last strength of this case study is the seasonal period for which the Superintendent had Concurrent Commands. The physical presence requirement at the Naval Postgraduate School was lessened because of the Christmas season. Graduation dates for the College of Strategic Studies and Defense Economics at the Marshall Center and the winter class for the Naval Postgraduate School occurred a week apart. Most of the permanent personnel at the Marshall Center were on leave during the time period the Superintendent was in Monterey. During this same period, the Flag Officer concentrated considerable effort with staff members preparing for the Graduate Education Review Board. Timing worked well.

B. WEAKNESSES

The Concurrent Commander's workload increases upon assumption of a second command. A hypothesis of this study is that time commanding the initial organization is a significant variable in workload increase. In this case, the Virtual Commander had over a year between assumption of the two commands. Command presence, guidance, and philosophy were established well before the second command was assumed. This allowed the Flag Officer to feel comfortable leaving the initial command and focusing effort to establish command presence, guidance, and philosophy at the second command. The workload appeared to increase at least two-fold by subordinates interviewed in this study.

The workload increase also places a severe physical constraint on the Concurrent Commander. Personal fatigue may set in without the Virtual Commander realizing the problem because the focus will always be directed at one or both commands. In this case study, the Commander routinely conducts physical fitness training at 0630 to counteract the effects of fatigue. However, the Flag Officer conducts Marshall Center business until 1630 German time, then often interacts with the Naval Postgraduate School personnel from 1630 until 2100. The time zone difference in this regard has a negative influence on the Commander because it allows the Superintendent/Director to work upwards of 14-hour work days. The toll is physical exhaustion that, in turn, may impede decision making and leadership functions.

A second negative attribute associated with the time zone difference is the travel associated between the two commands. Although, the Commander in this case study uses the time to complete administrative requirements, the impact of traveling nine time zones in one day can not be understated. The Commander's circadian rhythm is altered and takes time to fully recover. The Commander may take precautions such as adjusting sleep patterns prior to departure, however there still is an impact as a result of the travel.

The Virtual Commander can not replace face-to-face conversational cues. Communication is limited to less rich media. Messages are therefore more likely to be misinterpreted, or not conveyed in the appropriate context. In addition, personal interaction is considerably reduced. The reduction in this case is addressed in a previous

chapter, however there is organizational impact because of the lack of physical presence. When the Virtual Commander is physically present at the organization, there is a sense of immediacy within the organization. When the Superintendent returned to the Naval Postgraduate School in December and January, the personal schedule was filled with mandatory counseling sessions, necessary administrative matters, and personal meetings. There was not much free time to relax or observe the climate of the command.

Evaluation of subordinates presents another limitation of virtual command. The Commander can not physically inspect the subordinates' work or work spaces while absent at the command. Subordinate observation is limited to two dimensional communiqué only transmitted by command members. Criteria for evaluation of personnel may shift to become more dependent on communication skills.

Another result of limited physical presence is the perception that the Concurrent Commander may not have the same sense of commitment to complete tasks while fulfilling job requirements of the second command. In this case, the interview subjects are very concerned about budgetary battles and the Commander's ability to fight for research and academic funding. Morale is reduced, which may impact mission effectiveness. The initial command feels they are losing their leader and giving up a major part of the organization. This problem is compounded by the 3-week/ 1-week split.

Another negative attribute associated with this case study is the question of the necessity of a Flag Officer commanding the Naval Postgraduate School. Several interview subjects mentioned that there is a real fear of the perception of the funding board concerning the position and status of the Superintendent. If the Flag Officer can do the job while being physically at the Naval Postgraduate School 25 percent of the time, why have one at all? This compounds the budgetary fears at the Naval Postgraduate School.

The Marshall Center offers several major limitations for the maintenance of a virtual command structure. The Garmisch school was established only three years before the assumption of Concurrent Command. The academic process is still in the infancy stage and complications are still being worked out. Values and beliefs have not yet been established, therefore they do not provide sufficient unstated guidance. In addition, the Marshall Center has had some difficulties as a result of inappropriate spending and

academic accountability. As a result, the new Director has placed considerable effort on changing the climate at the Marshall Center. This effort requires a lot of energy, energy not directed at the Naval Postgraduate School.

The Marshall Center is primarily an Army command. Even though this is a joint operation community, administrative functions are maintained using U.S. Army directives. Higher headquarters for the Marshall Center is the U.S. European Command. The difference in administrative processes between the new Director and the Marshall Center staff created some friction during the initial period for the Virtual Commander.

A critical weakness of maintaining a virtual command presence is the organizational dependence on information technology management and staff performance. The Virtual Commander must depend on technology for communication and retaining the decision making role. The military has more strict constraints because of redundancy of method and security of transmissions. These requirements are liabilities that must be addressed prior to establishing a virtual command structure. Staff must be technologically competent and creative to ensure that all relevant information is transferred to the Commander efficiently. If the staff is not efficient, the Commander may be bogged down with too much information placing too much time on screening the data.

All communication methods described in this study require coordination, effort, and assets. For example, in order for electronic mail to work all participants must have an account and a telephone extension. Even then, the sender is not assured the message is received. There is no immediate feedback procedure that occurs with a face-to-face conversation. All the meetings must be planned ahead of time, as in a traditional command, however staff members must establish the communication link well before the meeting starts or time may be wasted in the initial minutes of the meeting.

In addition, during the video tele-conferences in this scenario, the Superintendent did not hear secondary conversation. Although this was limited because the participants engaged in more monologue than in a traditional meeting, which is another liability, not hearing the secondary conversation may cause the distanced member to not feel part of the group therefore degrading the quality of the meeting. Secondary "hallway" conversation can not be heard when not physically present at a command. In addition, when a leader is

not physically at the command, the leader can not inspect to ensure standards are maintained.

Finally, a virtual command structure costs money to establish and maintain. The commands in this scenario incurred implementation costs for video tele-conferencing. Overhead costs were also attributed to maintaining the server for electronic mail and Internet capability. Variable costs include telephone use, Federal Express and postal expenditures.

C. OPPORTUNITIES

The uniqueness of the situation occurring with two academic institutions provides for several opportunities on which the Commander can capitalize. The first is initiating a consortium between the Marshall Center, the Naval Postgraduate School, and the Defense Language School, also in Monterey, California. Each command offers a specific area of education, and when combined can create a premier learning environment for advanced linguistic and security affairs instruction. The Marshall Center has opened dialogue with the Defense Language Institute about training and testing for language proficiency. Video tele-education can be used to cost effectively train military personnel without reduction in standards.

The Marshall Center also has countless prospects for Naval Postgraduate School faculty and students. Inter-faculty transfer with the National Security Affairs department can be implemented providing new academic resources and diverse academic faculty for each of the schools. Countless research possibilities exist for students at the Naval Postgraduate School. Besides obvious thesis research areas for National Security Affairs students, there are also possibilities for Systems Management and Operations Analysis students.

Systems Management students can study curriculum development, financial management, and information technology management at the Marshall Center. Operations Analysis students can conduct survey and optimization analysis for the school and the European theater of operations. This case study also offers several other studies for

experimenting with new technology for leadership scenarios. These potential research projects are addressed studies in the concluding chapter.

Manpower advantages for implementing a virtual command situation include fulfilling short-term requirements and downsizing potential for flag officers. Virtual command will allow an extremely qualified senior officer to fill billets that may be gapped for short periods of time. Such as in the case analyzed in this thesis, an officer may be the right person for the position, but still have equally important obligations at the initial command. A virtual command structure will allow that officer to fill two billets at the same time.

Further downsizing the military will impact all ranks. Virtual command will allow senior officers to command two organizations at the same time. This system may offer potential manpower savings for the Department of Defense. Advancing technology facilitates this process because improvement in media cues will create a better virtual command environment.

D. THREATS

The nine-hour time difference contributes significantly to the fatigue of the Flag Officer. Virtual Commanders who have vast distances between two commands may be faced with physical exhaustion. The time difference in this case allows the Commander to work two full workdays if required and the Commander often does. A sense of obligation to equally fill both jobs may cause a Concurrent Commander to be overworked. This schedule coupled with a lack of information because of physical absence may contribute to less effective decisions.

Time management is a critical threat for the Virtual Commander. Schedule efficiency is paramount. Subordinates will be mustered for video and audio conferences. The Commander must meet these obligations or the perception of uncaring leadership will prevail. Time is also wasted traveling to and from each command. The Commander described in this study uses this time to catch up administratively, however airplane travel does not offer the same luxuries as offices.

The Virtual Commander must press continuous information flow to retain the decision making process. Subordinates will rely on the traditional military leadership paradigm of passing the information to the Acting Commanding Officer if information flow is not addressed. If this problem is not published, there may be confusion on who gets what information. In this case, some subordinates held on to the information until the Flag Officer returned, others passed the information to the ranking military member, and the remaining personnel retained the communication with the Commander. This lack of understanding provides inherent difficulties in that uninformed, contrary decisions might be made by two or more people.

Morale problems may impede maintaining a virtual command structure because of the belief of subordinate personnel that the Commander may not have the same sense of commitment as a traditional leader. There may be a dramatic change of physical interaction between the Commander and subordinates, as there is in this case. This may lead to a perception of uncaring leadership because subordinates will not be able to see the efforts the Commander puts forth for the organization. In this case, loss of funding may create resentment.

Another potential liability is the cultural bias against perpetuating a virtual command scenario because of the traditional military leadership paradigm. The military has strong leadership principles that dictate the necessity for physical presence. These values may impede the entire process of virtual command. However, as the military's senior leadership become more comfortable with existing technology, this bias may be reduced.

The military also has traditional philosophies pertaining to redundancy and security in all forms of communication. The advanced information technology tools described in this study impede this idea. The video and audio conferences are transmitted over open telephone lines, and the electronic mail is transmitted through the Internet. Federal Express and Postal Service mail are also unsecured. The military does have secure conferencing lines and is currently implementing secure electronic mail so this problem may soon be resolved. However, these securities cost money.

Other potential hazards for this scenario are competition for the Commander's time, time allocation, and different reporting seniors for the Virtual Commander. The Naval Postgraduate School and the Marshall Center personnel must use time with the Commander efficiently. If one command were not to do that, the other command might become frustrated at wasted time.

The Flag Officer allocates three weeks of the month for the Marshall Center and one week for the Naval Postgraduate School. Even though this allocation was dictated from the Concurrent Commander's seniors, it may have an impact on one or both commands. The Virtual Commander may not be at the command when an emergency or an immediate strategic decision must be made. The Commander must rely on staff and the Acting Commanding Officer to carry the moment. Immediate physical presence may be required, therefore the Commander will have to transit to the command. Even though subordinates may be understanding, there may be resentment because of the lack of isolated attention at their command.

The strategic focus of the Naval Postgraduate School may be affected by lack of "rudder guidance." The Superintendent must surgically use the time in Monterey to cover a wide area of command functions. Subordinates may question whether one week is enough to effectively command the school, even though the Superintendent retains the decision making process while in Garmisch. A Concurrent Commander may also have difficulty with respect to two different reporting seniors. What happens if the reporting seniors give orders that contradict each other? The Concurrent Commander must rectify the situation.

The final potential drawback for the Virtual Commander is the ability to ensure accurate information. The Virtual Commander must rely on subordinate communications to ensure standards are consistent. Subordinates may communicate personal bias with correspondence to the Commander. Therefore, the future Virtual Commander should be wary of this complication.

E. CONCLUDING REMARKS

Analysis in this chapter is offered to provide guidance to future Virtual Commanders for implementing a virtual command structure. Specific research should be conducted to advance the field of study of Virtual Command. Recommendations for this research are offered in the concluding chapter.

VIII. SUMMARY, PROPOSITIONS, AND CONCLUDING REMARKS

A. SUMMARY

This inquiry into the factors that impact a Virtual Commander in a Concurrent Command structure began with background information on the Naval Postgraduate School/George C. Marshall Center case study. After one year of command at the Naval Postgraduate School, the Superintendent assumed the position of Director at the Marshall Center. The Concurrent Command created a need for maintaining a virtual presence while not physically at the Naval Postgraduate School. The thesis highlights several factors that must be considered before implementing a virtual command structure.

A Virtual Commander is an officer who has assumed command of an organization, is not physically present, and maintains command presence by using advanced information technology as a decision making instrument. A structure must be established to support this new leadership arrangement. The structure consists of efficient employment of personal staff to maintain continuous lines of communication to and from the Commander. Staff personnel must be trusted to filter extraneous information, manage time effectively, and to enforce the strategic vision of the absent Commander.

This thesis also examined personal interaction of the Superintendent of the Naval Postgraduate School prior to and after the assumption of the position of Director at the Marshall Center. There is a reduction of rich media, such as face-to-face communication, between the Superintendent and Naval Postgraduate School personnel because of the Flag Officer's absence. Other modes of communication, such as electronic mail, video and audio-conferencing are used as communication instruments in the place of face-to-face conversation. There is also a reduction in the number of meetings per week, however some of the interview participants feel that information is more streamlined compared to before the assumption of the second command.

Several cultural factors impede the virtual command process. A traditional military leadership paradigm that requires the Commander's presence creates some resistance to the Commander's absence that was seen in the interview data. This perception is based

on physical risk in combat leadership and the requirement of the Commander to inspire subordinates on the field of battle. Although the Naval Postgraduate School is not an operational command, the requirement in this case study is for the Superintendent to actively pursue an increase in students and dollars. However, concurrent command responsibilities may impede this pursuit. Another negative impact that was observed is the perception that the Commander may not be placing as much effort on internal Naval Postgraduate School issues as before the assumption of the second command. The Commander counters this belief by aggressively performing the same duties as before and using video and audio-conferencing to support the same team work ethic as before the second command.

The Superintendent works extremely long hours, using the nine-hour time zone difference to the advantage of both commands. The Superintendent conducts a full day's work in Garmisch, then at 1600 local time, turns to Naval Postgraduate School business. Meetings with the executive board are continued, although with degradation of quality of transmission. There are video resolution discrepancies when using video tele-conferencing. Also, video tele-conferencing is not as rich a method of communication as traditional meeting because of the lack of social cues and pauses in feedback.

There are several opportunities and challenges associated with a virtual command concept. These premises are detailed in the strengths, weaknesses, opportunities, and threats chapter. The future Virtual Commander must be aware of these factors to formulate a systems approach for implementing and, subsequently, maintaining a virtual command presence.

B. PROPOSITIONS

The material obtained from a multitude of ideas presented by those interviewed for this study and by archival data analysis lead to several propositions. These concluding statements should provide the groundwork for further empirical studies.

Proposition 1. Factors that affect the decision to conform to a virtual command presence include leadership style, staff capability, individual comfort with advanced information technology, access to information technology, and the type of command.

Some Commander's will not be comfortable relying on the tools of information technology to maintain their strategic focus. A more centralized command style will require more effort to maintain a virtual command presence to ensure the Commander's intent is fulfilled. If the Commander is not comfortable with managing information technology, there may be internal resistance and therefore more reluctance to implement a virtual command presence. Another factor in the decision making process is that staff personnel must be trusted to enforce the strategic vision of the executive level manager. If staff personnel fail in this task, the maintenance of a virtual command structure will be extremely difficult.

Some military commands will not have the capability to maintain a virtual command presence. Geographic and budget constraints impede the potential to implement a virtual command structure. Finally, the type of command will impact the decision to implement a virtual command presence because of traditional leadership roles. A traditional military leadership paradigm requires the physical presence of a Commander in more operational billets where physical leadership and personal risk enhance the Commander's ability to maintain mission orientation. Less combat oriented commands may have a more fluid transition to a virtual command structure. Any one of these four factors could be isolated for further research to examine where a virtual command might be implemented most effectively.

Proposition 2. The virtual command concept is more conducive for executive level managers than lower level managers. Physical presence is more necessary for lower level managers because they require more hands-on supervision, especially junior officers.

The requirement for junior officers to "be with the troops" may impede the process of implementing a virtual command presence at lower executive levels. Top managers perform more long-range planning, monitoring performance indicators, coordinating, and

consulting. These tasks require less physical supervision of the rank-and-file employees. Future studies could analyze the impact of a virtual command presence at various managerial levels.

Proposition 3. Traditional executive managerial roles are affected by concurrent command implementation.

The lack of physical presence caused by a concurrent command structure will have an impact on the managerial roles of the Commander. Maintaining a virtual command presence affects the command because of the lack of physical interaction. Therefore, managerial roles, such as those defined by Mintzberg, will be altered. The disseminator, spokesperson, disturbance handler, and resource allocator roles will be impacted the most.

The Concurrent Commander will have to alter schedules to facilitate the managerial roles of both commands. The Concurrent Commander will have to be focused on the strategic vision of two commands, which will affect each of the command's subordinate interaction. Further study should be conducted to analyze the affects as these roles shift.

Proposition 4. Organizational comfort level with advanced information technology will impact the implementation of a Virtual Commander.

Organizations must be accepting of information technology as a viable source of communication. Information technology must be viewed as an asset not a necessary evil. Inhibitors may exist that would impede communication flow with the Commander. The largest impediment may be the culture of the organization.

Proposition 5. The process of change for implementing a virtual command structure will be less volatile if the Commander notifies all levels of the chain of command of the necessity of a virtual command presence.

Personnel may not fully understand the necessity of maintaining virtual command presence if not informed of the circumstances behind the implementation. In this case, the transition to a virtual command structure was aided by the organizational awareness of the Superintendent's situation. Subordinates are more likely to be accepting of the change

and are more likely to be accepting of the transition if they are aware of the implementation process and how the proper method of interaction in case they must communicate with the Commander. Survey analysis of the perception of subordinates of a Virtual Commander would provide insight on morale and effectiveness of maintaining a virtual command presence.

Proposition 6. Morale problems may exist at the initial command because the organization is losing a vital member.

If there is a time period between the first and second assumption of commands, the initial organizational members may be resentful of the situation. The initial organization is losing the 100 percent focus of its leader, possibly decreasing morale at all levels of the chain of command.

The longer the Virtual Commander is physically absent from the initial organization, the more difficult it will be to retain the specific strategic focus set by that officer. This is especially true if the Commander is co-located at the "other" command. Therefore, the strategic focus of the Virtual Commander will be degraded unless subordinate personnel work extremely hard to maintain the vision of the Commander.

Other factors attributing to morale problems include not having the Commander there when an emergency occurs, physical representation at command events, and personal guidance issues. The perception of uncaring leadership is a primary fear of military leaders. To counter this perception, the Virtual Commander must work long hours and use every resource to interact with subordinate personnel. Research must be conducted on this topic. If the executive-level manager implements a virtual command structure, mission effectiveness and subordinate morale must be maintained. If not, a virtual command presence is not warranted.

Proposition 7. Physical interaction is decreased with a virtual command structure and information technology is used to compensate for the lack of physical presence.

Quantitative analysis of the schedules of the Superintendent of the Naval Postgraduate School reflect a decrease in rich media with subordinates during the Flag

Officer's period in Garmisch. Rich media include face-to-face conversations and meetings. Face-to-face communication used in office calls, is impossible unless one communicator travels to the physical location of the other. In this case, meeting time is reduced from approximately 2 hours per day to just over 1 hour using video tele-conferencing.

Conversely, there is a drastic increase in less rich media, such as electronic mail, when the Superintendent is not physically at the Naval Postgraduate School. Archival analysis show a dramatic increase of the amount of transmissions to the when Superintendent is located in Germany. Video tele-conferencing is used to substitute for traditional meetings, however there are visual resolution problems along with substantial implementation and utility costs. Further study should be conducted to analyze communication impacts on the organization and the Commander. One specific area of study may be message degradation, examining how messages are conveyed through different media.

Proposition 8. Specific media should be selected for particular tasks but experimentation must be used to attempt to optimize communication flow with the Commander.

The Virtual Commander must maintain continuous information flow to and from subordinates. Specific media must be used for specific purposes. Forcing this continuity will decrease the amount of anxiety in the change process of implementing a virtual command structure. Subordinates will rely on one form of media to receive the Commander's message and will develop repetitive patterns that will allow that media to be used to the best potential.

At the same time, the virtual command structure should experiment with all available media resources attempting to optimize the capabilities. Experimentation will prevent stagnation while at the same time allowing the subordinate staff to grow and optimize budget resources.

Proposition 9. The Virtual Commander must rely on technology for communicating and retaining the decision making process.

Some officers will have difficulty depending on technology for information flow. Virtual Commanders will have to trust in non-traditional leadership communication methods to convey messages. There will be more problems with Commanders that rely on giving face-to-face orders rather than non-traditional methods.

Several information-technology management aspects should be researched. These include the degradation of video tele-conferencing compared to traditional meetings, the effect of less rich media on message quality, and the impact of electronic-mail in the military organization. Several senior military officers mentioned instances of violating the chain of command using e-mail. Research question in the area of implementing a governing instruction or specific format of electronic mail messages may provide key insight in the military application of computer mediated communication.

Proposition 10. Redundancy and security of transmissions are a prevalent part of military culture and will have an impact on virtual command maintenance.

There are cultural implications associated with the virtual command concept. Ensuring the message is received is paramount in military communication. However, redundancy and security have high financial costs for the Commander and the organization. Financial research presenting a cost-benefits analysis would give insight to the fiduciary assets required to maintain different modes of communication.

Proposition 11. A military leadership paradigm does exist "requiring" the physical presence of a Commanding Officer at the command.

The established order for decision making in the absence of a Commanding Officer is to default the decision to the ranking military member. This premise exists at every level of the chain of command, from the Duty Officer to the Deputy Commander at the strategic level. This paradigm has a profound impact on implementing a virtual command structure.

To counter the effect of this paradigm, the Virtual Commander must press subordinates to maintain the same information flow as if they were physically present at the command. If not, there will be confusion among subordinates

If there is a formal administrative turnover required by Department order, the official transfer of authority, reinforced by cultural default, shifts the flow of information to the Acting Commanding Officer. This transfer will impede the decision making ability of the Virtual Commander.

Proposition 12. Physical exhaustion is a severe threat of both the Concurrent Commander and staff personnel.

In order to maintain a concurrent command structure, the Commander and the staff must work extremely long work days. The physical and mental toll will have an impact if the Commander and the staff do not take precautions. The exhaustion compounded by imperfect information may lead to poor decision making.

This problem may be increased by the geographic distance between the two commands. The time zone difference in the presented case allows the Virtual Commander to work longer hours, completing two different jobs in one day. The Naval Postgraduate School and the Marshall Center are separated by nine time zones allowing the Superintendent to work one 8-hour Marshall Center work day and one 4-plus-hour day completing Naval Postgraduate School work.

Proposition 13. A Concurrent Commander must carefully determine the time allocation of physical presence for each organization.

A Concurrent Commander must carefully take into account the physical requirements at each command. An unbalanced schedule will cause the Commander to have back-logged work upon return to the less visited command. The perception of uncaring leadership must be a variable in the Commander's decision for physical presence. Other variables include the type of organization, the distance from each organization, and the duration of time between the assumption of the two commands. Therefore, each case will require different time allocations.

C. CONCLUDING REMARKS

Knowledge about Virtual Commanders holds value for the fields of organizational behavior, leadership, and military sociology. Advanced information technology provides subordinates the same, or sometimes more, access to a Commanding Officer than during previous generations of military leaders. This accessibility will provide an opportunity for Commanding Officers to be located away from their command. The concept of a Virtual Commander may apply to the next generation of military leadership. Advancing technology will provide information-rich media that enhance the future military leader's abilities to lead from any distance.

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